

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY



I.—INDICATION, CLASSES, NUMBERS, VALIDATION.

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I. INDICATION.

INDICATION is the unique determination of a thing by the specification of some of its relationships to the functionings of some human body, and of some human intellect. These relationships must possess a sufficient stability so that they can be repeated in different occasions of experience. The repetition will always involve modifications. Thus each instance must belong to a species such that each member of the species relates some properly conditioned occasion of human experience to one entity which is the same for each member of the species.

To exist is to function, and to possess a capacity for functioning beyond any particular actual exemplification. When a thing has been indicated, its existence has become a factor in experience which is consciously discriminated. But this conscious entertainment of that thing passes beyond the peculiarities of the special relationship by which it is indicated. When the entertainment does not transcend the relationship of introduction, this relationship is not termed 'indication'.

For example, when I point with my finger and say 'dog', you may be put into a certain relationship to a thing on the ground. If the dog be growling and about to fly at you, it is quickly abstracted from the initial relationship of indication as you

prepare for defence or escape. The initial relationship has then assumed the character of pure indication. But you may merely consider the complex situation, including the person pointing and speaking, and the dog on the ground wagging his tail. The relationship is not then functioning as pure indication. There has been no abstraction from its own intension, no abstraction of the dog from that situation. When the abstraction is complete, the thing indicated is retained merely as a possibility for an unspecified variety of functionings. It is merely '*that thing*'.

A symbol, for a person who understands it, is a factor sufficient to establish a situation of indication.

There are a certain number of propositions which are true of any one thing, merely because that thing is something indicated for human consciousness. Let such propositions be termed '*primary*'. The simplest of such primary propositions is the notion of '*There being some true proposition which has as its subject the indicated thing*'. This suggestion is a primary proposition. It happens to be true; but that is a minor point.

It will be necessary later to have this primary proposition symbolically defined. Thus, presupposing that x is a symbol indicating some object, then this primary proposition about the indicated object is symbolised by $\text{Ec}!x$, where '*Ec*' stands for the latin word '*Ecce*' meaning '*Behold*'. Thus $\text{Ec}!x$ can be read '*Behold x* ' or '*Lo x* '.

The unique individuality of x as a symbol secures the unique individuality of the object symbolised. But it decides nothing more. Thus $\text{Ec}!x$ is a proposition about x —the object, not the symbol—which ascribes to x no intension other than that intension derived from purely logical notions. It is a proposition involving x in the extremity of abstraction from intension. This is what is meant by saying that it is a proposition involving x in pure extension. It expresses that recognition of individuality which is involved in counting.

II. CLASSES.

(1) *Introductory Explanation.*

A class is a composite entity arising from the togetherness of many things in symmetrical connection with each other. There are three requisites that any concept of '*class*' must satisfy: (1) The members of the class are '*together*'; (2) The class is the totality arising from that composition: (3) In respect to membership of the class, one member is as good as another.

The point to discuss is whether this notion of 'together' is unambiguous. On the face of it, it is not so. For example, the books of that bookshelf are 'together' in virtue of certain spatio-temporal relations, and *in that sense* they are 'together'. Also in composition (arising from spatiality and bookiness) they form a unity which is that class *there* whose members are those *books*. Again, the finite cardinals are together in virtue of their common property of finite cardinality; and in virtue of *that composition* there is the one composite entity which is the class of finite cardinal numbers. Again, the ten commandments are together, in virtue of their individual status of being an authoritative Jewish-Christian precept of morality. The ten commandments *thus* form a composite entity which is a class. But these meanings of 'together' differ by reason of the diversity of the defining characteristics.

Secondly, at first sight it seems evident that for each of the special defining characteristics mentioned above, the mutual togetherness of the components issues in the unity of a composite entity which is the class in question. But some limitation, even to this assumption, is necessary. For consider any composite entity of which the component factors are propositions. Then propositions can be framed about the propositions which are those component factors. For example, 'All the propositions of that class are true', and again, 'All the propositions of that class are untrue', and again, 'Some of the propositions of that class are true', and again, 'Some of the propositions of that class are untrue', and again, 'None of the preceding four propositions belong to the class in question'. Here are at least five propositions not belonging to the class in question, and an indefinite number can be produced with the same characteristic.

Thirdly, even when some type of mutual togetherness does issue in a unit composite entity, the special mode of togetherness is an intension which may infect that composite entity. For example, the composition of continuous spatial regions may issue in one region which is one of the regions in question. Again, the unity—if there be such a unity—of things that are green [a unity *in virtue of* the greenness] may be so different from the unity of the books on a particular bookshelf that relations between the two composite entities cannot be determined in abstraction from the two intensions 'green' and 'books on a bookshelf'. Having regard to the indefinite, and unexplored, variety of intensions, a decision on this point belongs to conjecture.

The use, in mathematics and in mathematical logic, of 'classes' as composite individual things should therefore be confined to

types of togetherness defined in terms of assigned logical notions. In this way, the various members of any one class (so defined) are abstracted from all intension and form a composite unity defined in terms of pure extension. Their sheer individual diversity from each other remains as their only relevant character for this composition.

Here 'intension'—selecting among its various meanings—is taken to mean the employment of some property, or of some mode of composition, which is not among those considered in pure logic. The boundaries of pure logic may be conventional. But however that may be, 'intension' lies beyond those boundaries.

There are many ways of defining classes in terms of pure logic. Each definition assigns a different meaning to the term 'class'—meanings not mutually compatible. The discussion of the inter-relations of such diverse types of classes may be of some interest. It has never been undertaken. I here confine myself to one type of logically defined classes.

Logic supplies very many primary propositions about entities, and many types of togetherness of propositions. I select one type of primary proposition and one type of such togetherness, and thence define a type of togetherness of the diverse entities which are the logical subjects of those propositions. I assume the initial notations and general logical apparatus of *Principia Mathematica*, antecedent to the introduction of classes. Also I discard the doctrine that propositions as such are of various types. But the special forms of logical doctrine explanatory of the symbolism are really irrelevant.

The selected primary proposition about x has already been defined, and expressed as

$$Ec!x.$$

Originally I had employed a slightly more complex form. The form here used was suggested as a simplification by Dr. Quine. There is an advantage in selecting a form which is always true. But this restriction is not essential, although with two exceptions—in the later definitions of Δ and of X_n —I adhere to it. The selected mode of togetherness of propositions is ' $p \vee q$ ', that is ' p or q '. In the development of the doctrine of classes, propositions will only be analysed in respect to associations of subordinate propositions in this mode of togetherness. For example, $p \vee (q \vee r)$ is analysed as equivalent to $(p \vee q) \vee r$. But, with this restriction, $p . q$ is unanalysable. When this restrictive convention is observed, the symbol \vee is replaced by \cup .

This usage reminds us, first that the convention of restraint upon analysis is being observed, secondly that structure and not

truth-value is the main interest, and thirdly that these structural relations have their application to the structural relations of classes which immediately below are defined as special cases of propositions. In this definition of a class, the togetherness of x and y , as members of a class, is defined in terms of the togetherness of the propositions $Ec!x$, $Ec!y$, as expressed by the symbol \cup . This togetherness of the two propositions issues in another proposition which is a single composite entity. Thus the proposition

$$Ec!x \cup Ec!y$$

is defined as the class whose members are x and y . Analogously

$$Ec!x \cup Ec!y \cup Ec!z$$

is a class whose members are x, y, z . Also

$$Ec!x$$

is the unit class whose sole member is x .

Thus a class is a certain sort of proposition, but the interest of such a proposition lies in its structure and not in its truth, though in fact such propositions are always true.

In this memoir the symbol " $=$ " occurs, with appropriate modifications, in three distinct senses: (1) " $=Df$ " is the symbol for a nominal definition, the name being on the left: (2) " $=id$ " stands for sheer identity of meaning symbolised: (3) " $=$ " stands for the equivalence of propositions in respect to certain differences of structure, solely concerned with the connective " \cup ". When propositions satisfy the definition of 'class', these equivalent differences of structure yield classes with identical membership. Thus the 'equivalence' in question finds its important application in the consideration of the membership of classes. Postulates II, III, IV as stated below, express modes of variation in structure which yield this equivalence.

Owing to our restriction to true propositions [excepting A and X_n], it will be possible to replace " $=$ " by " \equiv ". But not *vice versa*. For " $=$ " means 'equivalence' of classes, or of structural forms whose importance lies in the application to classes, and " \equiv " means equivalence of truth-value. Classes are here defined as special instances of true propositions [with the exception of A]; thus they have 'truth-value' equivalence with each other.

A class is a proposition which can be reduced by 'equivalence' transformations to the form

$$Ec!x \cup Ec!y \cup Ec!z \cup \text{etc.}$$

We have to obtain a formal definition of the condition securing that a proposition p is a class. The definition must not be such as to restrict the membership within finite limits.

(2) *Definitions and Postulates.*

Def. I. $\text{Ec}!x := \text{Df} : (\phi) . \phi x . \supset (\exists \phi) . \phi x$

Def. II. $p \subseteq q := \text{Df} . q = p \cup q$.

Def. III. $x \in p := \text{Df} . \text{Ec}!x \subseteq p$.

Def. IV. $\text{Cls}! \alpha := \text{Df} : x \in \alpha . \supset x \in p : \supset \alpha \subseteq p$.

The symbol $\text{Cls}! \alpha$ is to be read ' α is classical'. Note that we have avoided any definition by enumeration, so as to prepare the way for postulates introducing infinite classes.

We note that since

$$\text{Ec}!x \subseteq \text{Ec}!x,$$

it follows that

$$x \in \text{Ec}!x.$$

Also evidently

$$\text{Cls}! \text{Ec}!x.$$

Hence, as stated above, $\text{Ec}!x$ is a unit class with x as its only member.

We must now select a proposition to be defined as the 'null class'. It must satisfy the three conditions: (1) that it is false, so that p and $p \cup A$ have the same truth-value: (2) that it has no membership: (3) that it is defined in logical terms.

$$\text{Def. V. } A := \text{Df} : (p) . p \sim p.$$

Thus the truth-value and membership of $\alpha \cup A$ are the same as the truth-value and membership of α . The whole presupposition of this discussion is a negation of the assumption that every propositional function, such as ϕx , is—in one and the same sense of the term for all propositional functions—associated with a unit entity which in some unique way is derived from the totality of the arguments satisfying it. One result of this denial is that there is no class [V] of all entities, such that for every class α ,

$$\alpha \cup V = V.$$

Thus the symbol (V) for the 'Universal Class' is *not* introduced. There is no such class, in the sense in which the term 'class' is here used.

Two definitions are required to introduce the 'common part' of two classes, and the 'residue' of one class not belonging to the other class.

(17) Def. VI. $\alpha \cap \beta \therefore = \text{Df} \therefore$
~~(17)~~ $\therefore \gamma \subset \alpha. \gamma \subset \beta : \delta \subset \alpha. \delta \subset \beta. \supset \delta \subset \gamma.$

(17) Def. VII. $\alpha - \beta := \text{Df} :$
~~(17)~~ $\beta \cap \gamma = A. \alpha = \gamma \cup (\alpha \cap \beta).$

Note that there is no such class as $-\alpha$. For such a class would be $V - \alpha$, and there is no 'universal' class V .

Def. VIII. $\hat{x}(\phi x) \therefore = \text{Df} \therefore$ ~~(17)~~ $\therefore \text{Cls} ! \alpha : \phi x. \equiv_x x \in \alpha.$

It is *not* true that for every propositional function $\phi \hat{x}$, the proposition

$$E ! \hat{x}(\phi x)$$

is true. Only some propositional forms are associated with a class in this way. When a form is so associated, it will be termed 'classical'.

The following postulates are either conventions as to restriction of usage and of analysis, or are reducible to primitive propositions of Symbolic Logic.

Post. I. $\text{Cls} ! A.$

Post. II. $\alpha \cup A = \alpha.$

Post. III. $\alpha \cup \alpha = \alpha.$

Post. IV. $\alpha \cup \beta = \beta \cup \alpha.$

Post. V. $(\alpha \cup \beta) \cup \gamma = \alpha \cup (\beta \cup \gamma).$

Post. VI. $\text{Cls} ! \alpha. \text{Cls} ! \beta. \supset . E ! \alpha \cap \beta.$

Post. VII. $\text{Cls} ! \alpha. \text{Cls} ! \beta. \supset . E ! \alpha - \beta.$

We now consider the classes derivative from a given class α : namely, the classes contained in α , and the class whose members are the classes contained in α .

Post. VIII. $\text{Cls} ! \alpha. \beta \subset \alpha. \supset . \text{Cls} ! \beta$

Def. IX. $\text{Cls} ' \alpha. = \text{Df. } \xi \{ \text{Cls} ' \xi. \xi \subset \alpha \}.$

The postulate concerning the existence of $\text{Cls} ' \alpha$ requires some limitation if we are not to introduce an assumption of the multiplicative axiom. The following form seems sufficient for the purposes of mathematics, though it excludes some of the higher cardinal infinities introduced by G. Cantor. It is necessary to anticipate the definition [Def. XII] of \aleph_0 in order to express the required limiting hypothesis.

Post. IX. $\text{Cls} ! \alpha. (\aleph n) : n \subset \aleph_0. Sm(n, \alpha) :: \supset :: E ! \text{Cls} ' \alpha.$

This postulate admits 2^{\aleph_0} , but excludes the higher exponential infinities from its scope.

The following consequences of the definitions are used later:—

$$\text{Cls } 'A = \text{Ec! } A = A \cup \text{Ec! } A$$

$$\begin{aligned} \text{Cls } ' \text{Ec! } x &= \text{Ec! } \text{Ec! } x \cup \text{Ec! } A \\ &= \text{Ec! } \text{Ec! } x \cup \text{Ec! } A \cup A \end{aligned}$$

$$\text{Cls } ' \text{Cls } ' \text{Ec! } x =$$

$$\text{Ec! } \text{Cls } ' \text{Ec! } x \cup \text{Ec! } \text{Ec! } \text{Ec! } \cup \text{Ec! } \text{Ec! } A \cup \text{Ec! } A \text{ and so on.}$$

III. NUMBER.

'Specific Numerosity', as a qualitative factor in the Universe, is intensional and lies outside Logic. But logically defined classes can be obtained which exemplify specific numerosities. These classes are the mathematical numbers which lie within the scope of Logic.

In defining a cardinal number n extensionally as (in effect) the 'class' of all n -element classes of given type, the theory of the foundations of arithmetic in *Principia Mathematica* entails (i) the existence of an infinity of isomorphic arithmetics corresponding to an infinity of logical types, and (ii) the dependence of number upon shifting accidents of factual existence [unless 'change' be conceived as illusory]. The alternative theory, here developed, is free from these objections. In short, according to the '*Principia*' definition, arithmetic is bound up with intension and with history. According to that definition a new litter of pigs alters the meaning of every number, and of every extension of number, employed in mathematics. The numbers should be defined in purely logical terms. Many alternative definitions are possible. We apply Frege's Inductive Procedure in order to avoid successive enumeration.

Definition of the 'Ordinal Function'.

Def. X. $\text{Ord. } (a, x) :: = \text{Df. } ::$

$$(\psi) :: \psi a : \psi y . \supset_y . \psi (\text{Ec! } y) \therefore \supset \therefore \psi x$$

Here $\text{Ord. } (a, x)$ is the general 'Ordinal Function' with 'base' a . For simplicity, we restrict a to satisfy $\text{Cls! } a$. But the restriction is not essential.

Post. X. $\text{E! } \hat{x}\{\text{Ord. } (a, x)\}.$

This is the postulate that an ordinal function with any base is classical. This postulate introduces infinite classes. An analogous postulate holds for every exemplification of Frege's formula for mathematical induction. Such postulates could have been combined into one general postulate.

Def. XI. $\text{Ord. } 'a . = \text{Df. } \hat{x}\{\text{Ord. } (a, x)\}$

The members of $\text{Ord}'a$ are

$$a, \text{Ec}'a, \text{Ec}'\text{Ec}'a, \text{Ec}'\text{Ec}'\text{Ec}'a,$$

and so on.

Thus

$$\text{Ord}'a = \text{Ec}'a \cup \text{Ec}'\text{Ec}'a \cup \text{etc.}$$

Also, $a, \text{Ec}'a, \text{Ec}'\text{Ec}'a$, etc., will be termed the 'ordinal numbers' with base a .

For pure arithmetic, defined wholly in terms of logical notions, we require a base which is so defined. We choose A for this base. Thus the successive *ordinal* numbers are

$$A, \text{Ec}'A, \text{Ec}'\text{Ec}'A,$$

and so on.

The class $\text{Ord}'A$ is a logically defined class exemplifying the lowest infinite cardinal. We can therefore employ G. Cantor's symbol \aleph_0 to symbolise it. Thus

$$\text{Def. XII. } \aleph_0 = \text{Df. Ord}'A.$$

This symbolism is, of course, redundant. But it is useful by reason of its suggestiveness.

Definition of the 'Cardinal Class'.

$$\text{Def. XIII. Card.}(a, x) = \text{Df.}$$

$$\hat{y}\{\text{Ord}'y \subset \text{Ord}'a, \text{Ord}'x \subset \text{Ord}'y\}.$$

This is the 'Cardinal class' with 'base' a . If x be *not* an ordinal with base a , then

$$\text{Card.}(a, x) = A.$$

We can prove the proposition

$$x \in \text{Ord}'a \supset \text{Card.}(a, x) = \text{Ord}'a - \text{Ord}'\text{Ec}'x.$$

Thus, replacing a by A , we find

$$\text{Card.}(A, A) = \text{Ec}'A,$$

which is the cardinal number 1, and

$$\text{Card.}(A, \text{Ec}'A) = \text{Ec}'A \cup \text{Ec}'\text{Ec}'A,$$

which is the cardinal number 2, and so on. The class of cardinal numbers can now be defined:

Def. XIV. $\text{Card.}'A = \text{Df.}$

$$\hat{\alpha}\{\alpha = A \vee (\exists x) \cdot x \in \text{Ord}'A \cdot \alpha = \text{Card.}(A, x)\}.$$

Thus the successive cardinals are 0, which is the null class A : and 1, which is the class with the single member A : and 2, which is the class with members A and $\text{Ec}'A$: and so on.

Thus the finite ordinals, and the finite cardinals are defined in purely logical terms. A class with one member is similar to 1 : and a class with two members is similar to 2 : and so on. We have therefore to proceed to the definition of relations, and in particular one-one relations whereby similarity is established. We have also to define the arithmetical operations.

IV. RELATIONS.

The use of the symbol $\hat{x}\hat{y}\phi(x, y)$ in *Principia Mathematica* involves the presupposition that the linear space-order involved in $\hat{x}\hat{y}$ can assign [as distinct from *symbolise*] an order to the specific functions of x and y in $\phi(x, y)$. But the definition of linear space-order in logical terms has not, at this stage of exposition, been effected. Thus $\hat{x}\hat{y}\phi(x, y)$ is infected with the intension involved in visual experience, in respect to its meaning. This criticism was explicitly formulated by Prof. H. M. Sheffer in his review of *Principia Mathematica*, vol. i., 2nd edition, in *Isis*, vol. viii. (1), February, 1926.

For example, in *Principia Mathematica* ($x \downarrow y$) is defined as ($i'x \uparrow i'y$). This is a special case of $\hat{x}\hat{y}(x\epsilon\alpha . y\epsilon\beta)$. Now there is no intrinsic order in the meaning of $x\epsilon\alpha . y\epsilon\beta$; for $y\epsilon\beta . x\epsilon\alpha$ is equivalent to it.

Thus, all the order in $\hat{x}\hat{y}(x\epsilon\alpha . y\epsilon\beta)$ is the spatial order of the symbols with no corresponding order in the thing symbolised. But the spatial order of visual sensation is not a logical concept.

An alternative definition of ($x \downarrow y$) will now be given, and a dual relation will be defined as a class of ordered couples. Analogously a triple relation will be a class of ordered triplets, and so on. In this topic Dr. Quine has recently introduced a remarkable development in methods of reasoning with respect to functions with any unspecified number of arguments. But here I do not touch upon his methods.

The ordered couple must be defined by the distinctive functions of x and y in a composite entity. This entity must exemplify concepts entering into pure logic. The *order* is not a reference to 'before' or 'after' in any historical sense of space or time. There are an indefinite number of ways of defining such composite entities. It remains to choose the simplest of such ways, avoiding any definition which becomes ambiguous for any special values of x or y .

We first define a subscript, *i.e.*, n subscript to x , whatever n may be.

Def. XV. $x_n = \text{Df. } \text{Ec} ! x = n.$

Hence

$$\begin{aligned}x_1 &= \text{Df. Ec! } x = \text{Ec! } A \\x_2 &= \text{Df. Ec! } x = \text{Ec! } A \cup \text{Ec! Ec! } A,\end{aligned}$$

and so on.

Def. XVI. (i) $(x \downarrow y) = \text{Df. Ec! } x_1 \cup \text{Ec! } y_2$.

Def. XVI. (ii) $(x \downarrow y \downarrow z) = \text{Df. Ec! } x_1 \cup \text{Ec! } y_2 \cup \text{Ec! } z_3$,

and so on.

Thus, the relation of x to y in $(x \downarrow y)$ is based on the logical relation of 1 to 2. An analogous definition of $(x \downarrow y)$ was given by Prof. Norbert Wiener in his memoir "A Simplification of the Logic of Relations," published in the *Proceedings of the Cambridge Philosophical Society*, vol. 17, 1914. Prof. Wiener also, in that memoir, defined a relation as a class of such couples. He did not touch upon the doctrine of classes.

Relations (dual) can now be defined as classes of ordered couples.

Def. XVII. $\text{Rel! } R \therefore = \text{Def. } \therefore$.

$\text{Cls! } R : u \in R \supset u \cdot (\exists x, y) \cdot u = (x \downarrow y)$.

Def. XVIII. $\hat{x}\hat{y}\phi(x, y) :: = \text{Def. } ::$

$(\exists R) \therefore \text{Rel! } R : (x \downarrow y) \in R \equiv x, y \cdot \phi(x, y)$.

It is *not* true that every propositional function, $\phi(x, y)$, is such that

$$E! \hat{x}\hat{y}\phi(x, y)$$

is true. Also there is no class of all relations.

Post. XI. $E! \hat{x}\hat{y}\phi(x, y) :: = ::$

$(\exists \alpha, \beta) \therefore \text{Cls! } \alpha \cdot \text{Cls! } \beta : \phi(x, y) \supset x, y \cdot x \in \alpha \cdot y \in \beta$.

Def. XIX. $xRy = \text{Df. } (x \downarrow y) \in R$.

Def. XX. ${}_1D'R = \text{Df. } \hat{x}\{(\exists y) \cdot xRy\}$.

Def. XXI. ${}_2D'R = \text{Df. } \hat{y}\{(\exists x) \cdot xRy\}$.

Def. XXII. $C'R = \text{Df. } {}_1D'R \cup {}_2D'R$.

Def. XXIII. $Cnv'R \therefore = \text{Df. } \therefore$

$(\exists S) : (x \downarrow y) \in R \equiv x, y \cdot (y \downarrow x) \in S$

Def. XXIV. $(1 \rightarrow 1)!R \therefore = \text{Df. } \therefore$

$\text{Rel! } R : xRy \cdot xRz \supset x, y, z \cdot y = (id)z :$

$xRy \cdot zRy \supset x, y, z \cdot x = (id)z$

Def. XXV. $Sm(\alpha, \beta) \therefore = \text{Df. } \therefore$

$(\exists R) \cdot (1 \rightarrow 1)!R \cdot {}_1D'R = \alpha \cdot {}_2D'R = \beta$.

Thus $Sm(x, 1)$ and $Sm(1, \alpha)$ both state that α has only one member. And $Sm(\alpha, 2)$ and $Sm(2, \alpha)$ state that α is a class with two members, and so on. Note that there is no *relation* of similarity in the sense in which 'relation' is here defined. Also there

is no *class* of unit classes, nor is there any *class* of all classes with some fixed number of members. This is an abandonment of the doctrine of number developed in *Principia Mathematica*.

It is to be noticed that this definition of the number of members of a class depends on the fact that the notion of specific number is *exemplified* by the membership of each cardinal number. But the *numerosity* of a class, in abstraction from the class itself, lies outside logic, and in that sense is intensional. A wider definition of similarity can be given in which the notion of classes can be avoided.

Def. XXVI. $\text{Uniq} ! \theta(\hat{x}, \hat{y}) \therefore = \text{Df.} \therefore$

$\theta(x, y) . \theta(x, z) \supset_{x, y, z} y = (id)z :$

$\theta(x, y) . \theta(z, y) \supset_{x, y, z} x = (id)z$

Def. XXVII. $\text{Sm}(\phi\hat{x}, \psi\hat{y}) \therefore = \text{Df.} \therefore$

$\{\lambda\theta(\hat{x}, \hat{y})\} \therefore \text{Uniq} ! \theta(\hat{x}, \hat{y}) : \theta(x, y) . \supset_{x, y} \phi x . xy :$

$\phi x . \supset_x . (\lambda y) . \psi y . \theta(x, y) :$

$\psi y . \supset_y . (\lambda x) . \phi x . \theta(x, y).$

Then

Post. XII. $\text{Cls} ! \alpha . \text{Sm}(\hat{x} \in \alpha . \psi\hat{y}) \supset . E ! \hat{y}\{\psi y\}.$

Thus, if a propositional function be similar to a class, then the function is classical.

V. ARITHMETICAL OPERATIONS.

Addition of Cardinal Numbers.—In order to understand the definition of 'addition', it is well to note the proposition

$a, b \in \text{Card.} \quad 'A . \supset : a \subset b . \vee . b \subset a .$

Def. XXVIII. $a +_c b \therefore = \text{Df.}$

$\therefore (\lambda c)\{a, b, c, \in \text{Card.} \quad 'A . a \cup c . \text{Sm}(b, c - a)\}.$

The usual propositions hold. For example

$$\begin{aligned} a +_c b &= b +_c a \\ (a +_c b) +_c c &= a +_c (b +_c c). \end{aligned}$$

Multiplication of Cardinal Numbers.—In order to define $m \times_c n$ where m and n are cardinal numbers, we have to define the operation of adding m to itself $(n - 1)$ times, *i.e.*,

$m +_c m +_c m +_c, \text{ etc., to } n \text{ factors.}$

We recur to Frege's method for the definition of an inductive function.

Def. XXIX. $\text{Add}(m, x, y) \therefore = \text{Df.} \therefore$

$\psi(1, 0) : \psi(u, v) . \supset_{u, v} . (u +_c m, v +_c 1) \therefore \supset_v \therefore \psi(x, y).$

Post. XIII. $m \in \text{Card.} \quad 'A . \supset . E ! \hat{x}\hat{y} . \text{Add}(m, x, y).$

Def. XXX. $\text{Add}'m \therefore = \text{Df.} \hat{x}\hat{y} . \text{Add}(m, x, y).$

We note the proposition

$$m \in \text{Card. } 'A . \supset . (1 \rightarrow 1) ! \text{ Add } 'm.$$

Thence we frame the definition

$$\text{Def. XXXI. } m \times_c n := \text{Df. : } (\exists x) . x \{ \text{Add } 'm \} n.$$

We now obtain the propositions

$$m, n \in \text{Card. } 'A . \supset . E ! m \times_c n,$$

and

$$m \in \text{Card. } 'A . x \{ \text{Add } 'm \} y . \cup \\ x, y \in \text{Card. } 'A . x = m \times_c y.$$

Exponentiation of Cardinal Numbers.—We have to define m^n , where m and n are cardinal numbers. Again, we have recourse to Frege's Inductive Method.

$$\text{Def. XXXII. Mult. } (m, x, y) :: \text{Df. : :}$$

$$\psi(1, 0) : \psi(u, v) . \supset_{u, v} . \psi(u \times_c m, v +_c 1) . \therefore \supset_{\psi} . \psi(x, y)$$

$$\text{Post. XIV. } m \in \text{Card. } 'A . \supset . E ! \hat{x} \hat{y} \text{ Mult. } (m, x, y).$$

$$\text{Def. XXXIII. Mult. } 'm . = \text{Df. } \hat{x} \hat{y} \text{ Mult. } (m, x, y).$$

Then

$$m \in \text{Card. } 'A . \supset . (1 \rightarrow 1) ! \text{ Mult. } 'm.$$

$$\text{Def. XXXIV. } m^n := \text{Df. : } (\exists x) . x \{ \text{Mult. } 'm \} n.$$

Then

$$m, n \in \text{Card. } 'A . \supset . E ! m^n,$$

and

$$m \in \text{Card. } 'A . x \{ \text{Mult } m \} y . \supset . x, y \in \text{Card. } 'A . x = m^y.$$

VI. DERIVATIVE NUMBER SYSTEMS.

Ratios.—So far the arithmetic of cardinal numbers has been considered. A 'Ratio' is a type of relationship between a pair of cardinal numbers. Relations of this sort are to be defined so that if (m, n) and (p, q) are two pairs of cardinal numbers, then m has to n the same ratio as p has to q , when

$$m \times_c q = n \times_c p,$$

excluding the cases when n and q are zero. Evidently the order within each pair is relevant. Thus we must define a ratio as a class of ordered couples of cardinal numbers. Each such ordered couple, considered in its function as a member of a ratio, is a 'Fraction'.

The notation $NR!Q$ will be used to mean that ϕ is a 'ratio'. The formal definitions are now given.

Def. XXXV. $NR!Q :: \text{Df.} :: \text{Rel}!Q \therefore$

$(\exists m, n) \therefore m, n \in \text{Card. } A.n \neq 0 :$

$x\phi y. =_{x,y} x, y \in \text{Card. } A.y \neq 0.m \times_e y = n \times_e x.$

We obtain the two propositions

$m, n \in \text{Card. } A.n \neq 0. \supset . (\exists Q). NR!Q.mQn,$

and

$NR!P.NR!Q.P \neq Q. \supset . P \cap Q = A.$

A class Q which satisfies $NR!Q$ is a 'ratio'. It follows from the preceding propositions that two distinct ratios have no common member: that a ratio is determined by any one of its members: and that an ordered couple of any two cardinals, of which the second member is not zero, determines a ratio. Hence the following definition and propositions.

Def. XXXVI. $m/n. = \text{Df. } (\exists Q). NR!Q.mQn,$

and the propositions

$m, n \in \text{Card. } A.n \neq 0. \supset . E! m/n$

$NR!Q.mQn. \supset . Q = m/n.$

The definitions of the ordinary arithmetical operations,—such as $P +, Q, P \times, Q$, and so on—as applicable to ratios can now follow the well-established mathematical procedures in regard to the extensions of the concept of number. They need not be explicitly stated here.

For the same reason, the extensions of the number-concept to include 'real number' and 'complex number' and number with signs $[\pm]$, can now follow the ordinary ways of exposition. It is perhaps worth mentioning that a complex number should then be defined as an ordered couple of real numbers with signs. These couples are to be conceived as 'complex numbers' when they are submitted to the interconnections resulting from the set of arithmetic operations as defined for complex number.

VII. SCOPE OF LOGIC.

This memoir illustrates a conception of the scope of Logic which was obscured by the dominant Aristotelian theory. The concept was adumbrated by Plato, when in *The Sophist* [252 D, 253] he points out the importance of a science of the mingling of forms. This doctrine of the study of logical structures, and of structures of structures, has been introduced into contemporary

Logic by Prof. H. M. Sheffer, thereby enlarging the whole concept of the subject. Mathematics (as currently understood) and the doctrine of classes form one preliminary division of it. In an enlarged sense of the term the whole topic may be termed 'mathematics'. Its applications may lie in a future as remote from to-day as were the modern applications in the lifetime of Pythagoras, or of the author of the Rhind Papyrus. Another approach to the study of structure has recently been introduced by Dr. W. van O. Quine [in a memoir available in the Harvard University Library, and now in process of publication in a revised form]. In the definition of ordered couples, Dr. Quine's ideas have been touched on; but not with his generality of approach.

In *Principia Mathematica*—confining attention to the symbolic development—Logic is presented as starting with the study of propositional forms in which the requisite arguments are propositions: for example, $p \cdot q$ and $p \vee q$ and $\sim p$. The 'mingling' of such forms to obtain more complex forms is investigated.

In respect to the truth-values of propositions exemplifying such forms, each form may have one of three possible characteristics which will be termed 'validation-values':—

- (1) The propositional form may be *validating*. By this it is meant that *in virtue of the form*, whatever be the particular content of the components, propositions illustrating that form are true.
- (2) The propositional form may be *invalidating*. Then, *in virtue of the form*, the propositions are false.
- (3) The propositional form may be *neutral*. Then *in virtue of the form* the truth or falsehood of the illustrative propositions depends on their content. They may be all true, or all false, or some true and some false.

For example, ' $p \cdot q \supset p$ ' is a *validating* form: ' $p \cdot \sim p$ ' is an *invalidating* form: and ' $p \cdot q$ ' is a *neutral* form. All [so-called] propositions involving real variables are propositional forms possessing one or other of these three validation-values attributable to propositional forms, namely, validating, invalidating, neutral.

All the propositions of Algebra are of this type. Thus

$$x^2 + 2x + 1$$

is an algebraic form which is *not* propositional. And

$$x^2 + 2x + 1 = (x + 1)^2$$

is a *validating* propositional form. And

$$x^2 + 2x + 1 = (x + 4)(x - 2)$$

is an *invalidating* propositional form. And

$$x^2 + 2x + 1 = 4$$

is a *neutral* propositional form. Thus the Theory of Equations is the theory of neutral propositional algebraic forms.

Unfortunately, in the 1st edition of *Principia Mathematica*, this interpretation of the 'real variable' had not occurred to the authors. The injunction in the 2nd edition to discard real variables by prefixing 'universal' quantifiers implicitly rejects the doctrine of 'validation-values'.

This rejection abandons the justification for logical *inference*. For example, the proposition

$$(p, q) : p \cdot q \cdot \supset \cdot q$$

is thereby placed on the same level with

"(x) : x is a temperature-reading on the top of Mt. Washington at any time during December, 1933. \supset . x is below 32° F."

This latter proposition is probably true. But it is not true *in virtue of its form*. No European, ignorant of the climate of New Hampshire, could by inspection divine its truth. In abstraction from content, the logical form exemplified is

$$\phi x \cdot \supset \cdot \psi x.$$

The validation-value of this form is neutral. It is to be noted that the validation-value of the simplest forms is neutral, namely

$$p \vee q \text{ and } p \cdot q \text{ and } p \supset q \text{ and } \sim p.$$

It requires a 'mingling' of forms to produce validating, or invalidating, forms.

The second procedure in Logic depends on the analysis—when possible—of a propositional form into a composition of subordinate propositional forms. Thus a set of propositional forms is obtained, namely the original form and its subordinate forms. The question then arises as to whether the validation-values of some of these forms determines the validation-values of the remainder. This is the general question of *implication*. Thus implication is primarily a relationship between propositional forms. The Aristotelian syllogisms constitute an elementary type of the implication-relationships between forms.

Finally, logical theory passes on to the general study of structures which are definable by the use of the apparatus of notions which lie within its scope. Such a study has an indefinite number of chapters. The doctrines of classes, relations, and number-

systems, as developed in this memoir, belong to this section of Logic. In this study the notion of truth-value is in the background.

It is to be noticed that the theory of classes in this memoir involves no explicit contradiction to the symbolic procedures of *Principia Mathematica*. The procedure in that treatise explicitly avoids any decision as to the existence of classes, *properly so called*. The doctrine of 'classes', as there developed, is an investigation into the interconnections of arguments satisfying unspecified propositional forms, subject to certain conditions. The composite unity of the many arguments satisfying a propositional function is never presupposed. This investigation remains valid and—as I believe—important.

But *Principia Mathematica* does not solve the problem of basing arithmetic upon constructions which are purely logical, abstracted from the metaphysical notion of types, and from the particularities of history. This memoir aims at supplying a logical doctrine of classes, defined with disengagement from all considerations other than those which are purely logical. Each mathematical notion is defined as such a class, definitely described.

II.—THE GIVEN.

By J. LAIRD.

THE term "given", more familiar in the un-Englished, plural expression "data", signifies, I daresay, something (or perhaps several things) from which a philosophy cannot intelligibly escape. I am confident, however, that it frequently makes its entry into philosophical territory without submitting itself to adequate examination at the frontier, and often passes for indisputable fact when its *visa* is a very doubtful theory. The intention of the present paper is to indicate some of the principal ways in which this surreptitious introduction may be effected.

To begin with, the term, however persistently it may be recommended by tradition, seems to have something odd, or at least something very metaphorical, about it. In any ordinary sense, a gift, surely, requires three participating entities, the giver, the thing given, and the recipient. Here presumably the recipient is an apprehending mind; but who, or what, is the giver, and what does the giver bestow? If we say that the universe is the giver we have surely a good deal to explain. Could the universe literally be a donor, and, if not, is the metaphorical sense in which it *is* a donor self-explanatory? To be strictly accurate, would it not be necessary, in any case, to explain that the giver is really the universe *minus* the apprehending mind? And if the problem concerns the mind *vis-à-vis* the universe (or some part of it) *minus* the mind, would there not be serious difficulties in distinguishing between what the universe (*minus* the mind) gives and what it does not give? The universe *vis-à-vis* the mind includes much that on almost any theory is *not* given; for it includes everything that a pensive substance could construe or excogitate in it; and how, except by a theory, could these boundaries be drawn?

Similarly, the nature of the alleged gift itself requires examination. When we speak of "data", we commonly consider the transaction from the side of the apprehending mind. Indeed it would seem that when we say "given", we mean "taken", although, no doubt, we often distinguish between mere "taking"

(i.e. a blind or a bland acceptance) and taking *up*, or, as the Scots say, the "uptak". Manifestly, however, a host of curious, but not of over-curious, questions arises when we examine what precisely is meant by this "taking" that is not "taking up"; and I shall glance at some of these by way of making a start.

(1) There is the sort of fact that W. E. Johnson (if I remember correctly) used to call "confronting". Any apprehending mind is or believes itself to be "confronted" with something, either ultimately, although not perhaps very obviously, with the whole universe (as on some theories), or (as on other theories) with a bit of a multiverse. What confronts the mind, in this sense, however, is as much a *quaesitum* as a datum. It is (perhaps non-spatially) *there* to be found, or haply to be found out, by searching—*there* as the mute subject of arduous interrogation; and although, since apprehension occurs, we may infer that there is *some* "taking" by the mind from what "confronts" it, nothing could be inferred concerning what precisely, or how much, is "taken". What "confronts" us may easily be too deep to see. It need not be revealed, and in most senses of "given" it need not be given at all.

(2) *Prima facie* it seems much more intelligible to say that the "given" means those parts, characters or features of a "confronting" object that are revealed to an apprehending mind. If so, the "given" would name what we all want to discover; but how, without a preconceived and disputable theory, could we ever *identify* the "given" in this sense? And is it not plain that many accounts of the "given" are the dutiful offspring of a naïve or but slightly sophisticated theory of sense-impressions? If our minds, at the outset, were *tabulae rasae* and were also *tabulae ceratae*, it might be granted that they merely received impressions, and that this passive reception was just what was meant by "givenness". Most psychologists, however, would tell us that the function of sense-stimulation is rather to rouse than to impress us. The senses do not hand us a gift like a postman; and when traditional empiricism spoke of sense-impressions as something imposed or "striking the soul", it pocketed the advantages of the "impression" metaphor without accepting the obligations. Its "impressions" (although non-voluntary) could not intelligibly be said to be "given" but were the *prius* of all philosophical chatter about "giving" and "taking". Certainly this conception of passive reception occurs in many philosophies that are not empiricist; but may not these other philosophies be suspect on the same grounds?

(3) It is very often taken for granted that what is "given"

must be given in sensation; yet *prima facie*, we might also speak of what was given in memory, and should at least raise the question why what is imagined or intellectually conceived is *not* given. Here the root notion, as before, seems to be that the given must be passively, or (should I say?) pathically received; and memory is supposed to be disqualified (or at any rate such memories as have an earlier date than the waning parts of a "specious present") on the ground that although the remembered fact may seem "passive", the getting of it frequently needs some trying.

This view would appear, very uncritically, to identify activity with perceptible effort. By parity of reasoning, therefore, the sort of memory, image, or intellectual idea that seems, as we say, just to turn up, should also be held to be "given"; and if we look for some subtler way of distinguishing activity from passivity, what sufficient reason have we for holding that sensations are passive? Have we the right to maintain that anything is simply taken by the mind without being assimilated, transformed or otherwise actively modified? Might we not hold, with at least equal plausibility, that anything we apprehend is the product of a partnership between "active" and "passive" factors, and infer in consequence that a *mere*, or naked, or adamant datum was never at all likely to be visible? The product would be apprehensible, but the partners, in their separate identities, might very well be invisible agents in an invisible factory, never interviewed, never articulate, never accessible to letter or telephone.

(4) M. Bergson's phrase "*les données immédiates*" appears to suggest that non-immediate data are conceivable; and Miss Stebbing has recently asserted with some emphasis that data may be indirect, at any rate if they are sense-data. "This table," she says, "is given (when I am in fact perceiving the table) along with the sense-data of which I can, by an effort, become immediately aware"¹—a view which appears to suggest that although the "given" is immediate the impact of its immediacy may be postponed until a conscious effort has brought the immediacy about.

All such contentions, however, presuppose an understanding of what is meant by "directness" and by "immediacy" respectively; and "directness" or "immediacy" may be just as puzzling as "givenness". For the most part, when any philosopher speaks of "direct" apprehension, he wants to deny

¹ *Aristotelian Society Presidential Address*, 1933, p. 27.

a certain type of indirectness, *viz.* : representative indirectness. The entity in question, he asserts, is not apprehended vicariously through a deputy but, metaphorically speaking, "face to face", or, with less or no metaphor, must *itself* be apprehended. (And he may add that, even on the representative theory, the deputy would not be apprehended by *another* deputy).

Even so, however, it would be possible that representatives played a part, perhaps inevitably, in the apprehending process. Their function might be to usher us into the presence and then to retire. Again, in some highly general sense of "mediation"—a term that includes all the means to an end as well as the middle terms in an inference—it would be possible that instrumental devices and even inferential steps might be necessary before the given could be received. A bequest is not the less a bequest because it may have to be admitted to probate.

Indeed, there seems no end to the metaphors that troop in when the original metaphor of "givenness" is allowed to pass the barrier. "Immediacy", for instance, may suggest com-
presence and even spatial contact, although we might reasonably ask why a space-interval or a time-interval should nullify a gift. Again, I seem to discern a tendency in some quarters to transform a discussion about givenness and its opposite into a discussion about Russell's form of the contrast between "acquaintance" and "knowledge about" (in which case concepts and relations would be "given" as well as other data, since Russell holds that we are "acquainted" with concepts and relations).

(5) In general, however, the "given" is contrasted with anything inferred and with anything intellectual. It is also contrasted with any "construction" and with anything that may be held to be "transcendent".

These explanations, I hope, have been sufficient to justify the assertion with which I began, *viz.*, that "givenness", if cross-examined, would turn out to have a protean character and a mixed pedigree. And now I propose to make a fresh start.

There is at least one perfectly obvious and (I should say) quite unexceptionable sense in which we all speak of "data" and say "given so and so". This is the sense in which, from a "given" starting-point, we proceed in some search. Thus from such data as finger-prints, bloodstains, cigarette-ash and clear indications of left-handedness, a detective in the stories sets about to find the only left-handed cigarette-smoker who could have wielded a particular poker in such a way as to have smashed a particular plutocratic skull at a particular time in a particular library. Again we say, "given" this or that about isosceles

triangles, "required to prove" so and so; and if we are competent, we are expected to produce a triumphant Q.E.D.

In this sense of "data", all that should be meant is that what is said to be "given" is accepted, with respect to any particular problem, as agreed to be beyond argument (at least provisionally) and also as relevant (*i.e.*, as something not to be neglected). A datum is what is pertinent, unchallenged and accepted as such. No doubt the detective of our illustration may believe, and rightly, that the kind of data I have mentioned would be unchallengeable in any ordinary court. He would be a very poor detective, however, if he put his trust in their metaphysical invincibility; and he would be entitled to argue hypothetically from assumed or otherwise shaky data, provided that he was prepared to return to such data and establish them, that is to say, to treat them *not* as "data" when he had made sure of their consequences, and had checked up upon the same.

A great many philosophers, however, are bent upon discovering absolute, indefectible or metaphysically unchallengeable data, and others (I suggest) are prone to accept a "givenness" of this indefectible order without adequate investigation of their title to do so. Indeed, one might hint that if there are such absolute data, these are not very likely to be shown to be unchallengeable until the philosopher has approached the end of his task. It is possible, no doubt, that absolute data might be hit upon, rather early, in a fortunate *aperçu*. It is conceivable that some of them are pretty easy to find—as some suppose sense-data to be when they enquire seriously into our evidence regarding what is called "the external world". It might be permissible to hope that at least one indefectible datum, like Descartes's *Cogito*, should appear pretty quickly, and be proved to be indisputable after a manageably brief attempt to doubt everything seriously. Again, clearly, it might plausibly be maintained (*a*) that data of this class are always the starting-points of some argument and therefore must come before the end of a completed system, and (*b*) that many systems ought to be capable of checking and modifying their provisional data *ambulando* to such an extent that their provisional character may entirely disappear. Since cumulative evidence, however, is seldom wholly conclusive, the last of these contentions is suspect in a considerable degree; and, generally, there would seem (to speak mildly) to be prudence in Dr. Schiller's recent suggestion that we might "do better to give up the hunt for absolute data".¹

¹ *Journal of Philosophy*, xxx., 18, p. 493.

To be sure, it might be contended that there must always be a great multitude of *absolute* data, since every appearance must be just what it appears to be, and, in that restricted sense, absolutely so. Many such appearances might indeed be unprofitable data, since they might not lead us far, and, in the extreme case, might lead us nowhere. A politician's dream of a purple shirt, for example, or a penny-a-liner's idea of a managed currency might not be good starting-points for any metaphysical enterprise however adventurous. Still, they would be genuine, if vague and circumscribed, appearances. And they could be argued about.

Such a view, obviously, would apply to all appearances without exception—to suppositions, to self-contradictory and to other erroneous judgments as well as to the drunkard's pink rats and the ordinary sober man's perception of a clock upon a mantelpiece. There would, however, be a proviso and a big one. All appearances would be absolute data, being just what they seem, but they would be *effable* data only on the assumption that it was possible to describe them in such a way as to say neither too much nor too little. And that might be very difficult. For example, to say "There is an appearance x " is not necessarily to say "an apparition x appears to someone's mind", for the "appearance" in question might be a feature of the minding, that is to say only one entity, the mind, might be involved and not two entities, the mind and the apparition. Again the statement " x seems thus and thus" might be very misleading indeed; for it might be taken to mean that the object x which confronts the mind presents the mind with a gift or "presentation"; and that would be an easy way of obtaining three entities when perhaps there is only one, or not more than two, in Nature.

In any case, few philosophers would be content with a view which implied that their absolute data became highly questionable as soon as it was asked whether these data were anything more than mere seemings. Most philosophers attempt either to "salve the appearances" (*i.e.*, to salve a selection of them) or else to attain "reality" by some speedier route than this patient salvage. We may therefore confine our attention to instances of the "given" that are alleged to be more considerable than *any* appearance however fantastic or absurd.

Take, for example, "sense-data". Philosophers who argue from or about these (and who hope that their arguments will take them somewhere), do not, I think, lay any particular stress upon the truth, if truth it be, that *all* appearances, accepted innocently as mere seemings, must be just what they seem.

On the contrary, the claim they set up on behalf of sense-data is (a) that the sense-given is either a peculiarly primitive or peculiarly stubborn (perhaps inexpugnable) datum in some further sense, or (b) has special and undeniable relevance to an ulterior metaphysical question of great importance, the problem of "the external world". Let us consider these points in their order.

(a) The "primitiveness" of sense-data seems to assert the traditional opinion that memory and imagination are "derived" from sense-impressions. If so, it might reasonably be objected that some recollections are not recollections of sensations, and that it is a very limited type of "imagination" that is restricted to the "images" that (perhaps) mimic or echo sense. Again, philosophers for the most part busy themselves about the sense-data of adults, and it is clear that *these* "data" are not primitive in every relevant sense of that term. They are logical or metaphysical rather than psychological or biographical *termini a quo*.

Moreover, the "stubbornness" of such "data" surely suggests their prolonged resistance towards any attempt to explain them away, to include them in anything else, or in some other fashion to get behind them: and although the matter-of-fact might be so plain that *prolonged* attempts of this kind were not really necessary, it would at least be prudent to make them.

(b) Certain critics of "sense-data" appear to maintain that the (proclaimed) *relevance* of these data to the problem of the external world is itself a suspicious circumstance, since it is an admission that the data are picked for a purpose, *i.e.*, that peccant philosophers select the "data" that they believe they can use for some particular metaphysical purpose, and arbitrarily abandon all else. Here the critics seem to be wrong. The "data" are not made relevant by being selected; and insight, although variable and rare, need not be at all arbitrary. But when is the insight attained?

If we could assert, with Hume, that "the only thing that can stop" our inferences from being merely ideal and proceeding *in infinitum* is "an impression of the memory or senses, beyond which there is no room for doubt or enquiry",¹ we should, of course, have committed ourselves wholeheartedly to the doctrine of absolute and invincible sense-data. If again, with Kant, we held that it was evident that conceptions without (sensory) "contents" would be *empty*, we should be admitting, by implication, that *something* sensory was always required for the appre-

¹ *Treatise*, Selby-Bigge's edition, p. 83.

hension of an existent physical object. It would seem to be advisable, however, to ask whether these principles are inevitable or overwhelmingly probable, and, if they are, whether they are inevitable simply because they are neither more nor less than a description of the ineluctable givenness of sensation.

Historically speaking, Hume's claim was the jubilant assertion, and Kant's resembled a candid admission, of what is commonly accounted the grand discovery of the experimental era in physical science, *viz.*, the discovery that pure intellection can never explain how actual things behave, and that any adequate theory of matter-of-fact behaviour has to be based upon, and repeatedly tested by, sufficient sensory observation. This piece of history, however, is itself enough to show that the necessity for "sense-data" in natural knowledge has not at all times been apparent to the human intellect, even during periods when the human intellect was, in many ways, very creditably perspicacious. Both Hume's principle and Kant's, therefore, might be said to be the results of centuries of scientific effort, instead of being starting-points that imposed themselves upon anyone who began to think seriously. Consequently, it is not unreasonable to raise the question whether the lessons of history in this particular are quite unambiguous.

In general, we find no difficulty whatsoever in believing that physical Nature might have imperceptible constituents or properties. Consequently it is no part of the meaning of a physical property that it should be capable of being sensed; and although we commonly hold that the (macroscopic) things which have either imperceptible properties or an imperceptible "microscopic" constitution are perceptible in certain respects, there is still room for doubt concerning the part that sensation plays in such matters.

Thus it might be held that perception, not sensation, was our real evidence for the existence of physical objects, and that perception always includes non-sensory and even intellectual factors. If so, the mere admission that the *intellectus sibi permissus* was apt to go joy-riding above the clouds would not imply that sensation alone kept our minds anchored to fact. For perception might be competent for this necessary office. Similarly, so far as I can see, there is no absurdity in the opinion (whether or not it is true in fact) that the office of sensation is not to reveal the nature of things, but that sensation is, in essence, a biological-psychological event that accompanies perception (the thinking or intellectual part of perception being the only part that does reveal the nature of things).

In that case, it would not be true, as Hume said in effect, that the senses *alone* gave us matter-of-fact. The only matter-of-fact they would yield would be just themselves; and granting that we might infer other sensations from them, it would be quite possible, and not at all improbable, that we should have to make these inferences *via* our non-sensory acquaintance with physical Nature. Similarly it would not be true, as Kant affirmed, that the senses yield indispensable elements for the apprehension of a natural object, that is to say of a phenomenal thing which itself must always be an intellectual-sensory product. For physical objects, interpreted in this intellectual way, would not be categorized sensations, but would be intelligible things the apprehension of whose existence, in perception, was simultaneous with certain very striking, but scientifically irrelevant, sensations.

I am not suggesting that any such view is actually true, and I should freely admit that any historical expression of it (such as Descartes's when, in the second Meditation, he examined the piece of wax) left much in obscurity. I should suggest however that some such view is not manifestly untenable, and that, if it were tenable, there would be no appreciable plausibility in the contention that "sense-data" afford an indispensable "given" basis for all natural knowledge. They would be "given" only as irrelevant although interesting and perhaps picturesque apparitions; and such "givenness" might be better adapted to scientific romance than to a reasonable knowledge of Nature.

Turning from the senses to the memory, we observe that unmetaphysical persons, such as policemen and magistrates, usually regard memory-data as nearly on the same footing as sense-data, that metaphysical persons such as Hume frequently bracket the "senses and memory" together, and that, since it is seldom possible for the record of an observation to be absolutely synchronous with the observation, most so-called "sense-data" in the sciences are really "memory-data". Hence it seems reasonable to enquire, more carefully than hitherto, why it is relatively unusual to hold that "memory-data" are "given" in the absolute sense so frequently ascribed to "sense-data".

As we have seen, some of these reasons are not very convincing. There is no very cogent reason, for example, why a datum should be simultaneous with the giving of it. In the alternative, if this precise simultaneity were always required, there might be some doubt whether sense-data *were* "given" in this strict sense. They could scarcely, for instance, be "given" by those external objects to which we are accustomed to impute the gift; for nervous conduction is rather slow; and if the giver were,

let us say, a star, the gift might be delayed for years or centuries. If, however, it were held that memory is always mediated by some present fact, such as a present image (an analysis that may well be disputed), it might be held, although it might also be denied, that the mediation destroyed the givenness. Again, it might perhaps be maintained (a) that since what is remembered looks different from what is sensed, both cannot be absolute data in any instance in which both might be held to "give" or reveal the same event; and (b) that sensing, being infallible, might "give" an absolute datum while memory, being fallible, could not.

Regarding (a), the fact alleged might be rather difficult to prove, since the past is usually held to be irrecoverable except in memory. Let us suppose, however, that it could be proved by a comparison of re-perception with an old memory (in instances in which there was no reason to suppose that either re-perceiver or re-perceived had changed appreciably from the original perceiver or perceived) or, again, by comparing approximately contemporary records of events with our oldish memories of them. In that case, granting the possibility that the same event might be revealed both to sense and to memory, there would surely be no constraining reason for denying that the event might be given *differently* to both. Sense-selection might be different from memory-selection although both selections, *a parte rei*, were passively received, or "given", in the same fundamental sense.

Regarding (b), since an illusion might be "given", there would seem to be no great force in the entire argument. Suppose however, that infallibility *was* a mark of givenness. In that case (I think) the only possible meaning that could be attached to the alleged infallibility of sense would be that neither truth nor error could come into it, unless judgment also had entered. If so, by the same argument, memory could not be "fallible" unless memories either were judgments or inevitably implied judgments; and it does not seem to me to be true that memory either is or implies a judgment, granting that the judgment "I have experienced this before" is a correct way of describing, at the level of judgment, the sort of retrospective reference that belongs to memory proper. Perhaps, however, the contention is that the "given" must always be non-referential—in which case I can only say that I can see no reason for such an assertion, and that I think it would be legitimate to dispute every theory which implied that indications could never be "given".

It would be impracticable here to attempt to traverse the whole range of entities that, for one reason or another, might be

regarded as somehow given, but it is necessary to examine the reasons for the customary exclusion of intellectual things, or noemata, from the compages of things "given".

(1) If "data" are understood in an argumentative and relative sense, that is to say as something granted, temporarily, to be beyond argument and to be the basis for construction or inference, it seems clear that the intellectual steps by which we pass beyond such data are not themselves data in the same sense. It would be possible, no doubt, that the *quaesita* of one enquiry should be accepted as the data of another, or again that the plain man's data would be challenged, and therefore treated as problematical, by any one who, like Descartes, adopted the policy of experimental philosophical scepticism. But that is another story.

Thus it seems difficult to conceive what could be meant by saying that inference might be "given". For inference seems always to be an intellectual process in which we pass beyond (accepted) data. On the other hand, there would not seem to be any downright absurdity in maintaining that *implications* might be "given", although indirectly. For implications are determined; and in some philosophical statements the term "given" does not seem to mean much more than the uniquely determined or, more generally, the alternative-less. Thus Miss Stebbing says¹ that there is an "inescapable given" where there are no "degrees of freedom" and appears to mean that whatever is "inescapable" must be "given". The only way, however, in which one can escape from an implication is to refuse to draw an inference or to draw it negligently; and in the same way one can escape from a sense-datum (*e.g.*, a visual one) by refusing to look or by looking carelessly.

(2) Nevertheless it is apparent that the sense, if any, of "givenness" which would permit of implications being given, would imply that many noemata are data, and would suggest the conclusion that intelligence itself might be a "datum" as well as an operation upon data. Thus if there are "categories" or (in Hobbes's phrase) "universal things" pervading all existence, it would seem that these have simply to be accepted, when found, in the same "inescapable" way as any other "data". As we have seen, there may be definite irrelevance in the contention (despite much philosophising) that our minds must make an effort before they can reach such noemata (for nobody, I suppose, would maintain that, since Everest is rather hard to climb, the summit of Everest is not

¹ *Loc. cit.*, p. 10.

a tactual datum when a climber actually sits upon it). Granting, again (which is a large part of the historical controversy about innate ideas), that the explicit recognition of categorial properties comes rather late in personal development, it would not seem that the "givenness" of these properties, when they are discerned, should be appreciably affected by these biographical considerations. (For few would infer that delicate differences in the taste of tea are *not* "given" to a qualified tea-taster, simply because he required a great deal of practice in order to become qualified.)

(3) In most theories, however, the categories, and perhaps all noemata, are interpreted in a very different fashion. The *esse* of intellect, it is maintained, is *operari* not *intelligi*. Hence categories are ways of thinking, not objects of thought. They make things intelligible, but are themselves intelligible (if at all) only in the secondary sense that we may become reflexively aware of what they do. Similarly the rules of the syllogism are ways in which we may reason correctly, not primarily the objects of reasoning. They are not premisses, and they are certainly not *given* premisses or data.

If all the categories and if all other noemata had precisely the same status as the rules of the syllogism there might be health in these contentions. What commonly happens, however, is that we are informed that whatever is given must be given to us *by* an object, and (perhaps after a short delay) that it must be given to us *in sense* by a *physical* object. And this looks very like a sickness induced by the imprudent deglutition of unnecessary theory. We are fortunate, indeed, if we escape the pathological condition induced by the theory that the business of the understanding is to make Nature out of a chaotic manifold, to transform an unprincipled "given" into something principled, to construct a cosmos with our heads although not altogether out of our heads.

If this or something like it be the interpretation currently put upon the "given", it seems clear that a highly sophisticated theory, not innocent description, has been very actively at work. There is a long road, even if it is a concealed road, from the "given" in the sense of the "inescapable" to the "given" in this narrow and quite special sense; and if we cannot avoid these disputable and sophisticated suggestions when we speak of the "given", we should do better, I think, to banish the term "given" altogether. An innocuous meaning might be attached to it if the term were understood in some new-fangled sense; but it would be politic to invent a new term

to bear the innocuous meaning, in the hope that the new term would beg (or seem to beg) fewer questions—until it, in its turn, became corrupted by usage.

(4) M. Meyerson¹ has recently called attention to a passage in Kant where that author said, for short, “*dari non intelligi*”, when he meant, as he explained in the long, something *given* in *Anschaung* “which could not be brought to clear conceptions and therefore could not be intelligibly elucidated”. From this statement it could not indeed be inferred that, according to Kant, noemata could never be given. It would only follow that a *mere* given need not be intelligible; and in phrases like “intuitive data . . . nisi conceptus spatii per mentis naturam originarie datus esset”² Kant obviously contemplated the possibility of a noematic “given”. The famous introduction to the Transcendental Logic, however, by stating that an object is *given* to us by the receptivity of sense and is *thought* by the spontaneity of intellect seems to leave no doubt that “givenness” was utterly opposed to “thinking” in Kant’s developed theory.

I have said enough, I hope, to give grounds for the judgment that any such intransigent and initial contrast between “thought” and the “given”, is, to speak temperately, disputable, and, to speak intemperately, a huge preconception. Consequently, I should prefer, now, to examine some of the ways in which a similar contrast might be defended and not assumed.

One of these ways is clearly expounded by M. Meyerson, who quotes, in illustration, a passage from Lord Rutherford to the general effect that the atomic constitution of Nature is fundamental to so pronounced an extent that complete comprehension of it is beyond human power. In other words, the “given” is what *remains* after we have done our best to intellectualise it and have failed; and I should like to consider some of the implications of this view.

(α) As we have noted, it would be possible for the failure to come pretty soon, and, when it came, to be visibly complete. In the main, however, as is obvious from the instance of the atomic theory, the contention is that we should hold fast to the things that cannot be shaken after we have tried intellectually to shake them in every possible way—a lengthy, not a speedy process. Data of this sort, despite their moderate degree of intelligibility, are forced upon us simply as that which is. We are driven to

¹ *La déduction relativiste*, p. 39. The passage from Kant is in his *Werke* (Berlin edition), iv., 484. (I had not heard of Meyerson’s death when I wrote.)

² Berlin ed., ii., 404.

the conclusion that they are the clay without which nobody could make a brick. They are vindicated by their stubbornness.

(β) Such a view clearly demands an explanation of what is meant by trying to intellectualise these data and failing to do so. Plainly the meaning is not that these data are "alogical" in the sense of involving some internal inconsistency or of being hopelessly unsuited, say, to logico-mathematical treatment. On the contrary, as the instance of the atomic theory shows, logistical developments are entirely possible. The meaning is only that although there is no primary rational recommendation for the view that, for example, the first law of motion should assert rectilinear instead of circular or other crooked motion, it really does assert the former and repudiates the latter. It is foolish to try to see *why*; we are forced to accept the ultimate fact *that*.

(γ) This view, of course, is compatible with a wide range of doctrines concerning what constitutes a "primary rational recommendation"—too extensive a theme to be examined here. It may be permissible, however, to mention briefly the relation of certain modish views of the "formal" functions of the intellect to the theory of data.

One such view is that the essential function of the intellect is to discover purely formal equivalences or equations. In this way M. Meyerson, unless I have misunderstood him, would assert that anything is intellectualised when its "identity" with something else is shown, and that the achievements of the intellect are impressive in proportion as unexpected identities are disclosed. The "logical positivists", again, maintain that formal treatment is restricted to the structure of language and is completed when a "tautology" is demonstrated. They sometimes add that what is formal and what is communicable are one and the same (an addition that seems a very odd sort of tautology).

According to all such views, forms, in themselves, would seem to be peculiarly empty, and must have "matter" to which they apply even if the matter is ineffable or incommunicable. So far as I can see, however, nothing about the "matter" could be inferred from this conception of "form". According to M. Meyerson the sciences evince amazing pertinacity and acuteness in their hunt for concealed identities. When they fail to achieve such identities, they are acquiescent rather than scientific—except, perhaps, at the very end. According to the logical positivists, on the other hand, formal treatment, although immensely richer than would appear on the surface, could never

expect to be omniscient, or capable of proceeding very far (as Hegel's dialectic claimed to proceed) from a single empirical premiss such as that "something is". Indeed they would appear either to adopt a countless multitude of empirical data, or artlessly to accept the preconceptions of traditional phenomenistic empiricism regarding everything that is non-formal.

I should like to suggest, then, that all such theories, if they are not merely theories about forms, should endeavour to attain clear principles concerning that to which the forms (or the single form) apply. In that case, it would be reasonable to expect that some account of "data" be provided, so that we might know whether all appearances, unless entangled in a network of form, were to be accepted in all innocence, and could learn how to discriminate between the more solid and the flimsier non-formal data. To say, for example, that anything that is non-verifiable in personal experience (or in *Erlebnis*) is nonsensical is the kind of statement that needs both justification and explanation. Is *all* personal experience on the same footing or have we, in language partly Humian, to distinguish at least between the *Erlebnis* that is an "impression" and the *Erlebnis* that is only an "idea"? Is all personal experience sensory or "derived" from sense? Is a person only a "heap" of perceptions? Might there be noematic personal experience? And so on. The principle of verifiability in personal experience would require further explanation if it were only a hypothesis or rule of method. It could not be proved to be final without a still more elaborate process.

(δ) The place of "data" in a "coherence theory" of truth or of science should also be considered. Thus I have heard responsible exponents of the view maintain that the doctrine of coherence *presupposes* data, and consequently cannot be employed to determine the nature or to establish the reality of such data. This is not, for example, Bradley's view, unless, indeed the relevant data were held to be feelings so occult and inarticulate as to be below all discerning, and therefore to be describable in the plural only if the plural were less misleading than the singular. But the view is one of the possible interpretations of the coherence theory.

On the other hand, it is surely a very difficult interpretation, for most people would be disposed to think that if any "data" proved peculiarly stubborn and intractable (with reference to other "data") it would be permissible to go back upon the alleged "data" and see whether they were truly adamant. In other words, the ordinary theory would be that "coherence"

is applied to *provisionally* accepted data. Indeed it might reasonably be said to be an advantage of most types of coherence theory that, as a principle of method, they retained an open mind about their "data", being prepared to find them, at a second look, very different indeed from what they had seemed to be at the first look.

Nevertheless the coherence must be the coherence of something, and if it is not maintained that all appearances are "coherent" without further ado, there is a *general* requirement for a basis or bases of the coherent structure, and the said basis could not itself be an affair of coherence. It seems likely, again, that any coherence view would have to take account of the weight, the extent and the stubborn singularity of its provisional and also of its less provisional data; and it seems very unlikely that coherence could be the measure of *these* characteristics. In short, a coherence view requires a theory of data (although not perhaps of absolute data) as well as a theory of coherence.

Accordingly I submit that the attempt to make an absolute separation between intellect and all noemata on the one hand and the "given" on the other is itself dark, devious and ambiguous; and that the different forms of the separation (which are *very* different) are accustomed to take much for granted that should be carefully pondered.

In conclusion, I should like briefly to recapitulate some of the points that have tended to recur most frequently in this discussion.

(1) It is tempting to renounce *all* absolute data, and to insist that the given is always provisional. This denial, however, and the inference from it, would seem itself to be an over-confident piece of metaphysics. For it is at least possible, that the *Cogito* (say), or sense-data, or memory-data or all appearances *are* absolute. Therefore the rejection, *in limine*, of all systems based on absolute data might itself be a piece of intolerably intolerant metaphysics.

(2) If there were absolute data, it might be possible to hit upon some of them, or upon some classes of them, rather quickly and rather easily, the relevant insight in such instances being particularly facile. Thus it might be very obvious that *all* appearances are in some sense data and in some sense absolute. On the other hand, the contrary opinion that the "data" of most metaphysical systems are (and therefore should be admitted to be) provisional only (becoming less provisional as the system approaches completion) has much to commend it; and in that case the firmer data of the system are shown to be firm, not at the beginning, but towards the end of the system.

(3) Most of the current or traditional attempts to distinguish by an initial declaratory act between what must be "given" and what could not be "given" are suspect in the highest degree because they beg so many questions. Thus if the "given" were to mean what is "inescapable", what is determinate, what constrains or is imposed upon our thought—and all these senses may occur—it is, to say the least, not at all obvious either that sense is "given" in any of these ways, or that intellection is *not* "given"; and it is not impossible for search, "activity" and enquiry to result in something that would be "given" in several intelligible senses of that term. It is very questionable whether *dari* is opposed, in principle, to *intelligi*; and it is common for the "given" to be presumed legitimate when it is, in fact, an adopted foundling whose parentage is left thoroughly, and very inconveniently, obscure.

III.—A LAST PLEA FOR FREE-THINKING IN LOGISTICS.

BY H. W. B. JOSEPH.

1. I AM almost ashamed to carry any further the discussion between Prof. Stebbing and myself, especially after she has admitted that she neither attempts nor desires to convert me to her point of view. I think it uncharitable of her not to desire to do so, if she believes hers is true. I should very much like to convert her to mine, though I have no hope of it. But perhaps I may be allowed to make one last attempt at putting my case about the nature of variables and the logistical notion of implication. The other points I will leave alone.

2. I said in my first paper (§ 11) that 'there is no real analogy between a mathematical and a propositional function, nor between the so-called variables in the one and the other'; and that 'a mathematical variable, whether argument or function, is the common or determinable nature in various determinate and quantitative or intensive subjects'. Prof. Stebbing replied (MIND, N.S., xlii., 167, p. 248) that 'a variable is not a nature but a symbol; nor does a variable denote a common nature'. I have admitted, and admit, that some symbols are called variables; some also are called constants. Why are the first called variables? I cannot get Prof. Stebbing to see any importance in this question. But is it not, in mathematics, because they are symbols for any or all things exhibiting a variable common nature? That is what varies, and the values of the variable are the particulars diversely exhibiting this variable identity. The symbol derivatively called a variable does not denote the common nature; it denotes any or all of the particulars exhibiting it. I made this correction in § 7 of my second paper, acknowledging that I had written carelessly in the first. In *sin* θ , θ denotes any or all angles—any or all particulars of the variable common nature *angularity*. If Prof. Stebbing denies that angles of 1° , 30° , 45° , etc., exhibit diversely this common nature, I can only respectfully dissent. But I do not think she wishes to, though other logisticians have gone so far. So much for the mathematical variable; but what of the logistical? In the expression ' $(x) : x$ is a man. \supset . x is mortal', x ,

which is called the variable, is not so-called because of a common and variable nature diversely exhibited in any or all of the particulars which may be 'values' of it, or which it may denote.

3. Prof. Stebbing, in her second Reply, has not met this point. But on page 157 she considers the symbol for 'implies', \supset , which is not a variable, and makes some general remarks about symbols, intended to clear up my confusions. I cannot follow her here. She calls \supset an ideogram, I suppose because it is written with a meaning, and points out that nothing has meaning of itself, but only through being used with a meaning. But how it follows that words which have meaning are not the words which can be found on a page (p. 158), and that 'words' is therefore equivocal in the first part of this sentence, I do not see. A noise or an ink-shape (I do not like the word *mark* in this sense, for it suggests being a mark of something) becomes a word or symbol because *it* is used with meaning, not because something else called by the same name is so used. A *mark* and that *mark-as-used* are not two but the same, though to be used and not to be used are not the same. No doubt there is a question in what sense the noise or the ink-shape has meaning when not being uttered or heard, written or read; but that, though important, is, I think, irrelevant to the issue. And when, having called \supset an ideogram, and noticed that there have been several of these ideograms, several \supset 's, on her page, Prof. Stebbing says that 'there is only one ideogram indicated by the mark \supset whenever the mark \supset is used in the way in which Russell intended to use it', she seems to me plainly mistaken. I suppose she is troubled by the fact that there are many marks, but one and the same meaning. It is the trouble of identity in diversity again. Is she not trying to escape from allowing that the *same* mark can recur? A word, said Lord Russell, is a class of similar noises. But if the noises are not the same each time, we shall not escape the difficulty by saying that they all indicate some one and the same noise. 'An ideogram is an ink-shape used to mean something. There are many similar ideograms. Therefore they all indicate some other one and the same ideogram.' This is not a quotation from Prof. Stebbing's exposition, but I think it is a fair summary of what she writes; and obviously it will not do. But if she means that they all indicate one and the same *meaning*, of course in a different sense of 'indicate', why does she call *what is indicated* an ideogram? To understand by *ideogram* first a mark-as-used-with-a-meaning and then the meaning with which the mark is used will not clear up anybody's confusions.

4. Prof. Stebbing does not understand how I can say that colour varies in red and green. I mean that a red and a green

are the same so far as each is a colour, and different so far as this identical nature is differentiated in them. Perhaps she thinks this nonsense. But nothing can vary which is not the same. The identity may be the one nature in its many specific forms or in instances of these; or it may be the individual in its different states at different times. Colour varies in red and green, angularity in 1° , 30° , 45° ; and I vary as I get tired or stupider or more alert. I do not think Prof. Stebbing would construe everything in terms of bare particulars changingly related (even they would have to be the same in different relations). She says there cannot be classes unless there are universals. But surely that means that the members of the class *angles* are instances of angularity, and the members of the class formed by all marks like this ink-shape \supset are instances of the same shape; and angularity varies in angles, though their shape need not in the divers marks like \supset .

5. All this passage of her reply is intended to remove confusion on the subject of symbols from the mind of someone who denies that a variable is a symbol. But I am astonished to be told next that a constant in mathematics is 'a special case of a variable, in which the class in question contains only one member'. For this implies that a variable is a class containing many members, and I had been told it is a symbol, and Prof. Stebbing says she does not think—nor do I—that a class is a symbol. As to a constant in mathematics, I confess that if an angel from heaven told me that it is a class containing only one member, I should not believe it. I have yet to be persuaded that there can be a class with only one member, for a class is an aggregate; though doubtless there can be a kind of which there is only one individual. We may say that only one person is placed in the first class by the examiners; but that means 'judged to be of a certain standard of merit'; or we think of other candidates reaching the same standard on other occasions. Consider the constant in the equation of the circle, $x^2 + y^2 - c^2 = 0$. Here c stands for or denotes any or all of the radii of some circle, not the class of them; and the class certainly does not contain only one member. But they are all of the same length, whereas their ordinates and abscissæ vary in length. Their length, then, is constant. But that again is not a class containing only one member; it is what is the same in the members of the class *radii* that contains innumerable members. And Prof. Stebbing, who has said that a variable does not denote a common nature, cannot maintain that a constant does. But whether therefore c stands for the radii or their common length, it does not denote a class. So much for the constant in mathematics.

6. But in the expression ' $(\exists c) : \phi x . =_x x = c$ ', by which

logisticians would elucidate the meaning of such a proposition as *Scott wrote Waverley*, the 'constant' c is not like that of mathematics. As I have pointed out, mathematical statements are all universal; even $2 + 7 = 9$ concerns *all* aggregates of 2, 7 and 9 respectively; and c in the equation of the circle stands for any or all of the radii of any circle. In the logistical expression, however, c stands for just some one individual and no other. The sum of the squares on *every* ordinate and abscissa from some point on the circumference of a circle is equal to the square on the radius to that point, and though x and y take different values, the equation is true for all values they take. But in the logistical expression, if x could take different values, $x = c$ could not be true for them all; it must take only one value, *viz.*, that of c . In fact, therefore, ' $x = c$ ' merely means that there are two symbols for the same 'object and . . . this object alone'. It is not an equation; and the 'constant' no more than the 'variable' in logistics is comparable to that in mathematics. And Prof. Stebbing, so far as I can see, has nowhere met my objections on this point either. I certainly cannot agree that the use of c here differs from that of a in $\phi(a)$, in the Introduction to *Principia Mathematica*. If c is not supposed to be a constant in the same sense as a , replaceable like that by a proper name, whether 'logically proper' or not, how can it be said that it stands for an object that might be indicated, and of which alone it is true to assert '*wrote Waverley*'?

8. I pass to implication—*i.e.*, 'material implication'. It must not be forgotten that formal implication is alleged to be a class of material implications. I asked in my last paper (§ 36) what one relation was intended by logisticians, when they said that p implies q . The context shows that 'materially implies' was meant. I had pointed out that it could not be disjunction, because the disjunction involved is not between p and q , but between other propositions about the truth of p and q . I had said that sometimes, when p is said to imply q , they are similar as both true, sometimes similar as both false, sometimes dissimilar as one false and the other true, with the proviso that p must be false and q true, not *vice-versa*; and I urged that these are several relations, not one. Prof. Stebbing seems to object to my asking what one relation is intended, because she thinks logisticians intend several, such as 'material implication, strict implication, incompatibility, entails'. But what has this to do with the question, what one relation is intended by material implication? I have received no answer.

9. But, though what is said is no answer to my question, it

raises fresh difficulties. Messrs. Lewis and Langford use a different symbol from \supset for 'entails', and Prof. Moore writes 'ent' for it in his paper on *External and Internal Relations*, insisting strongly on the importance of the difference between \supset and *ent*. I supposed that whenever logisticians write \supset , they think they write it with the same meaning; and the substitutions they allow themselves in working with their symbols are surely only justified on that assumption. Still, it is not for me to contend that what logisticians think about their symbolism is always true. And I will venture to point out that, so far as I can see, they do not always use \supset with the same meaning, *i.e.*, they do not always use 'implies', when it has the sense of 'materially implies', which Prof. Stebbing does treat as *one* sense, with the same meaning.

10. For when they write $p \cdot p \supset q \cdot \supset \cdot q$ the symbol \supset is not used in the same sense each time. That p implies q means merely that in fact it does not happen both that p is true and q false. Thus 'Julius Cæsar was assassinated' implies 'Henry VIII. had six wives', because it did not happen that, while Cæsar had been assassinated, Henry VIII. did not have six wives; but it is perfectly conceivable that Cæsar should have been assassinated and Henry VIII. not have had six wives; no contradiction is involved in the supposition. On the other hand, that p and $p \supset q$ together imply q is true necessarily. For this means that it did not happen both (i) that Cæsar was assassinated and this fact was not combined with Henry VIII. not having six wives and (ii) that Henry VIII did not have six wives; and here what did not happen could not have happened, except by Henry VIII. both having and not having six wives, which is inconceivable. Thus the relation, if any, intended by $p \supset q$ is one, a knowledge of which requires knowledge of particular fact. But the relation intended by \supset in its second occurrence in the expression $p \cdot p \supset q \cdot \supset \cdot q$ is not such. To know that $p \supset q$, I must already know either (i) that p is false, or (ii) that q is true, or (iii) both. To know that $p \cdot p \supset q \cdot \supset \cdot q$ I need only know the law of contradiction. If to know that $p \cdot p \supset q \cdot \supset \cdot q$ involved a requirement corresponding to that for knowing that $p \supset q$, I must either (i) know that p is true and false, which I cannot do, or (ii) that q is true, or (iii) that both p is true and false and q true, which also I cannot do. Thus I should have to know the particular fact that q is true—in my example that Henry VIII. had six wives—in order to reach that knowledge by the implication. That sort of implication could hardly be a basis of inference. But Prof. Stebbing writes 'As I said in my former article, when the condi-

tion *whatever is implied by a true proposition is true* is satisfied, then *implies* is a basis of inference'. Again I ask, what do logisticians mean by *implication* when they speak of material (and formal) implication?

11. It may be that, when they have translated propositions into their symbolic notation, and operated with their symbols according to the rules of the game, and re-translated the results into propositions, these will be found true when the original propositions were so. But logistics is said to be symbolic *logic*; and its formulæ are alleged to express more accurately what we really mean than ordinary language can. The nature of thinking ought therefore to be shown by its symbols of operation, and it seems to me that it is not.

12. But enough. I should abuse the reader's patience if I were to take up Prof. Stebbing's rejoinders on every point. I am sorry that I overlooked that the analysis of 'Hens lay eggs' in her British Academy Lecture was offered as an example of analysis in a different sense than 'logical'. Though, except for this, I believe I could sustain myself against the rejoinders I have ignored, those who are sufficiently interested to have followed the argument, whichever side they take, can perhaps divine the answers I should offer. I will only add a comment on her concluding sentences. She says that she is puzzled by the title of my articles, and does not think my discussion falls within the scope of logistics, even if 'logistics' be taken to include more than the algebra of logic; and that she can only account for my selection of the word on the principle of giving a dog a bad name. Well, I did not invent the name 'logistics', and I did not know it was thought a 'bad name'. My title was, of course, suggested by Berkeley's 'Defence of Free Thinking in Mathematics'. Berkeley thought that the mathematicians of his day, whatever success they had in the use of the calculus, made a number of assumptions in justification of their procedure which would not stand examination. I think the same about certain symbolic logicians of the present day whose doctrines, I believe, are often called logistical. I was glad to read in Mr. Max Black's recent book, *The Nature of Mathematics*, that others than I are becoming sceptical of the logisticians' claim to have reduced mathematics to logic. My discussion, I should say, falls within the scope of logistics not in the sense of being a piece of logistical reasoning, but of investigating some of its foundations. I have taken a few fundamental logistical notions and insinuated doubts whether they are sound. I am content if I have encouraged any hesitating souls not to take for granted that all is well with the foundations of logistics.

IV.—NATURE IN THE PHILOSOPHY OF BOSANQUET.

By R. E. STEDMAN.

I.

My aim in this paper is not to confront Bosanquet with a preconceived theory of nature and test his conformity therewith, but to educe his own view from his writings and examine it, chiefly as to its internal consistency and as to its supposed concession of points important to realism. This last claim—made quite explicitly by Bosanquet, especially in his *Meeting of Extremes in Contemporary Philosophy* (1924)—may lend some interest to the present inquiry. A “speculative philosophy” of his general type, he maintains, concedes all that is valuable in contemporary realism. My conclusion on this point—to anticipate—is that his claim cannot be substantiated. With respect to its internal consistency I conclude that, while some of Bosanquet’s assertions about nature are indisputable—since they state the conditions of the problem from which any account must start—others are clearly contradictory of these. The general theory—I shall argue—involves these two or more strands, which are intended to be understood together, but instead of making between them—as the warp and the woof—a single tenable fabric, they defy integration. The several sides of the view seem to be merely stated, the reader being left to suppose that this juxtaposition of incompatibles is tantamount to their effective conjunction. If either is pursued alone, we are led to naturalism or to pan-psychism. This school of thinkers is accustomed to regard the incidence of contradiction as a symptom of ‘mere appearance’ (as opposed in the Kantian fashion to reality) but if contradiction arises in the body of a philosophical theory, it must surely be traced, first of all at any rate, to a defect in the theory rather than to a defect in nature. Whitehead’s ninth preliminary repudiation (in the preface to *Process and Reality*), namely, “that logical inconsistencies can indicate any-

thing else than antecedent errors", seems to me a watchword of sanity. In this belief, therefore, the present argument advances; that is, by taking at their face value such assertions as meet us in the course of Bosanquet's exposition. If this method is unsound in this context, then the criterion defended therein—that of logical coherence—must be meaningless.

We may, without prejudice, mean by 'nature', at this stage, the seemingly self-contained, mind-independent, spatio-temporal world which environs us. Something does so seem, even though we may, upon close consideration, wonder just what it is. This 'nature', 'natural world' or 'externality'¹—to use Bosanquet's favourite term—must obviously present the acutest difficulty to any spiritualist or idealist philosophy. It is, therefore, the more interesting to note Bosanquet's emphatic denial that his idealism does in any way (a) "volatilise . . . our world of fact and externality";² and his consistently reproachful attitude to James Ward for what he calls his (b) "refusal to admit a true externality".³

(c) "There must", he writes, as the heading or *motif* of a page in his *Principle*, "be a *bona fide* nature".⁴ And, (d) "the world of sense-perception, has being in its own right. . . ." ⁵ (e) There is an externality "at first purely external" which conditions the birth and growth of minds—an "unmodified and pristine externality . . . —the first nature of all".⁶ (f) "The world comes first" and from it "the types of our thinking and experience arise".⁷ (g) It is "nature" that "moulds" minds, or is "the instrument for their sculpturing".⁸ To this last theme two lectures in the series *Value and Destiny* are devoted. Nature, furthermore, is (h) "the source and storehouse of all primitive properties, contents and distinctions of mind". From it "the self . . . draws all its material, and even as subject . . . is making use of that material to give itself the feeling of selfhood".⁹ (i) "It is things . . . which set the problems of life for persons; and if you turn all things into persons the differences which make life interesting are gone . . ." And, "Why insist on reducing to a homogeneous type the contributions of all elements to the whole? What becomes of the material incidents of life—of our food, our clothes, our country, our own bodies?" ¹⁰

The lecture on the *Bodily Basis of Mind* in the earlier series affords many further such passages, but their citation would add nothing to the force of those quoted. It is interesting to recall, however, that this lecture moved Dr. McTaggart to observe that

¹ I shall discuss below the legitimacy of Bosanquet's use of this term as a precise synonym for nature.

² *Meeting of Extremes* (ref. as *Meeting*), p. 2.

³ *Principle of Individuality and Value* (ref. as *Principle*), p. 148 n.

⁴ *Ibid.*, p. 135.

⁵ *Meeting*, p. 2.

⁶ *Value and Destiny of the Individual* (ref. as *Value*), pp. 83-84.

⁷ *Principle*, p. 219.

⁸ *Value*, pp. 16 and *circa*.

⁹ *Principle*, p. 359.

¹⁰ *Ibid.*, pp. 239, 263.

"Almost every word that Dr. Bosanquet has written about the relation of mind and matter might have been written by a complete materialist".

But this vein of assertion, which gives strong colour to Bosanquet's contention that his type of 'speculative philosophy' concedes what is essential to the realist movement, must be read together with another vein—or rather a number of related veins—of which the following are examples.

Nature is (α) "plastic and responsive to mind"¹; it is (β) "for mind" and "presupposes mind".² (γ) cf. (g) "If you ask what in nature is *not* mind you can only answer, the fragmentary and disconnected *qua* fragmentary and disconnected".³ To this may be added a further type of assertion. (δ) "There is something of arbitrariness in any attempt to draw a line between them" (nature and mind). "It is all but impossible to distinguish nature from mind; to separate them is impossible."⁴

Other passages stress the *opposition* of these elements that are virtually inseparable and wholly indistinguishable as e.g.

(ϵ) "It" (pan-psychism) "treats the striking and thoroughgoing opposition and inseparability of mind and externality as if it had no more significance than a mere congeries of centres of experience belonging to different classes and degrees."⁵ These two themes are connected in the next sentence, thus (ζ) "It transforms the complementariness of mind and nature, on which as it would seem, their inseparability depends, by an analysis of one into the other such as wholly to destroy the speciality of function for which the one is needed by the other."

The main strands are brought together in the following characteristic assertions:

(η) Nature is "the condition and complement of spiritual being": (θ) "Nature thus exists only through finite mind. But finite minds exist only through nature": (κ) "The pure mind, or the pure nature of things—it does not matter much which you say".⁶

The final qualification under which all of the above must be read is (λ) "Anything which can ultimately *be* must be of the nature of mind or experience".⁷

II.

Let us take the several propositions which this philosophy of nature juxtaposes. Firstly (η), in what sense does Bosanquet propose that nature is the *condition* of spiritual being? The

¹ *Principle*, p. 366.

² *Ibid.*, *passim*.

³ *Ibid.*, p. 367.

⁴ *Ibid.*

⁵ *Ibid.*, p. 363.

⁶ *Ibid.*, pp. 319 and 371, *Meeting*, p. 85.

⁷ *Principle*, p. 135. Nature, even, is described as "a great form of experience" (see also *Meeting*, p. 3, *Principle*, p. 74).

point is made again in the latter part of (θ) and in (f) and (g). In these last the meaning is clear: nature is the condition of mind as the matrix is the condition of that which is cast in it. The conditioning is temporal and ontological, for that which "sculptures" or "moulds" *is*, and is prior to what it moulds. What is made or moulded is finite minds, and it is "the world" which makes them what they are. "We are now compelled to accept as fact", he observes, "a state of the globe prior to the existence of the human race, or even of organic life . . ." ¹ This pre-organic world set the conditions of life and of finite mind as exemplified in the human race. So far, I suppose, none would wish to object. But if this is the nature which conditions these finite minds, of what finite minds is this nature the "complement"? And "through" (θ) what finite minds does it come to be? That which conditions or shapes cannot very well in turn be shaped and conditioned by that which it conditions and shapes. If the nature x which conditions set n of finite minds is itself conditioned by finite minds, it will be by another set m . Set m will be conditioned by nature y , which in turn is conditioned by set p , which is conditioned by nature z . And to this series there can be no end. (At no point can the Absolute mind be brought in to close the series, for according to Bosanquet's rigorously immanent idealism the Absolute mind is not *another* mind, it is the energy of all finite minds; or, reversing the order, and stating the situation from the Absolute—or only fully true—angle, finite minds are simply "constituents of its energy".²) As Bosanquet states it, the "externality" of the Absolute mind is not *nature* but *finite minds*, whose place and function is to stand as the "copula" or "living link" between nature and the Absolute.³ The world before our minds appeared must therefore have existed as the "determinate object" of, or externality for, a host of angelic or other finite minds. But so to say is to offer mere speculation in place of explanation. There may be such minds, but apart from the ungrounded assumption that the only manner in which nature can exist is as the determinate object of, or externality for, some mind, there is no reason for resort to them. We cannot, by turning to the unknown, throw light upon the known, and so far as we are "compelled to accept as fact" a certain situation we already have some knowledge. But supposing we accept the reference to angelic minds, we are no nearer

¹ *Logic*, vol. ii., 2nd ed., p. 218.

² *Principle*, p. 372.

³ See, e.g., *ibid.*, p. 218, "Externality is joined to the absolute through conscious centres". To some of the difficulties here provoked I shall turn below.

an intelligible view of the status of nature, for to these angelic minds nature still stands in that unexplained relation for an understanding of which we have turned to the angels. We can still concede the all importance to these minds of the nature which conditions them and gives them "content" (*h*), but are left asking what can be the importance to this nature of these (angelic or human) minds.

Bradley, to meet this situation, is not wholly averse to the doctrine of a "world-soul",¹ and so—as Bosanquet rightly points out—verges upon pan-psychism. To this same conclusion Bosanquet seems to be logically driven, though he vigorously repudiates it. Bradley suggests also the bare possibility of a residual nature related to no finite mind, but belonging solely to the Absolute. Furthermore, he is by no means as sure as Bosanquet that there is any sense in speaking of a wholly 'pre-organic world'.

"Outside of this boundary" (that of our intelligence), he writes, "there is no Nature. We may employ the idea of a pre-organic time or of a physical world from which all sentience has disappeared. But with the knowledge that we possess, we cannot, even in a relative sense, take this result as universal. It could hold only with respect to those organisms that we know, and, if carried further, it obviously becomes invalid. And again, such a truth, where it is true, can be merely phenomenal . . . A Nature without sentience is, in short, a mere construction for science, and it possesses a very partial reality".²

I quote this, not to discuss in detail the issues raised, but simply to indicate that, in Bradley's opinion at any rate, Bosanquet's flirtation with naturalism cannot be considered compatible with their common premises. Given these premises, Bradley's conclusions seem to me intelligible, if not acceptable; Bosanquet's seem—if language is to be read unambiguously—practically unintelligible. Bradley is prepared to consider, not only a world-soul, but the host of other-than-human "finite subjective centres" to which reference has been made. (This latter Bosanquet is not really prepared to accept. Such minds, so far as they are introduced, are not, for him, 'subjective').³ Furthermore, Bradley is very much more thoroughgoing with his phenomenalism than is Bosanquet—who is never fully happy when this consequence of his system comes to mind—and is therefore more agnostic in his attitude to this whole question.

In (*θ*) nature and finite minds are said to exist, each "through" the other. This, however, is qualified by the assertion that

¹ *Appearance*, p. 240.

² *Ibid.*, p. 244.

³ See pp. 333-4 below.

nature is somehow inferior to, and included in, mind, for mind (or "spirit") is, "a type of experience superior to and including it".¹ Now, in what sense or senses shall "through" be taken? If, in the same sense, then to the difficult but familiar notion of a dog that feeds on its own tail Bosanquet is adding that of the same tail feeding on the dog. Indeed, if so low an illustration can be allowed of so high a matter as the "whole", it is pretty obvious that some such situation as this must obtain, on Bosanquet's principles, as the means of "the self-maintenance of the Absolute".

A further point concerning the "conditioning" of minds cannot be ignored. We have accepted the "moulding" of minds by an antecedent nature. How is this compatible with the view, insisted on throughout Bosanquet's writing (as the key to his whole doctrine, namely that only a mind is a "whole" and so is "self-existent"),² that nature is simply (δ) "the fragmentary and disconnected *qua* fragmentary and disconnected"? How can a fragmentary something "mould" anything? If it be objected that I am taking a metaphor too seriously I can only reply, firstly, that the whole system, to my mind, turns on such metaphors; and secondly, that the metaphor in question seems to me a tolerably good one. In certain moods Bosanquet agrees, but in others he hesitates. Furthermore, the "fragmentariness" or "disconnectedness" of a nature conceived in abstraction from mind is quite central to his underlying idealism. Therefore, the clash of these two positions appears to me significant.

Bosanquet has a retort ready. He would very likely reply (as he insists in his *Value*) that the nature which "moulds" our minds is a "second-nature" already shot through with volitions. "Every jot and tittle of this world is a volitional transformation of a relatively natural fact." A world of "pure natural fact" is "imaginary".³ But this is a complete retraction of (e) and (f), which are quoted from the same volume. In any case, is it not obvious that (e) and (f), with respect to *our minds*, are simply true, and the retraction is sheer sophistication in the interests of a theory? Earthquakes are not in any degree "volitionally transformed" when they obliterate cities. Such is the "pristine externality"—the "first nature of all".⁴ And it is only in

¹ *Principle*, p. 74.

² See especially, *The Distinction Between Mind and its Objects*, *passim*.

³ *Value*, pp. 113, 114.

⁴ It is interesting to remark that Bosanquet's famous note in his *Logic* on the "exceeding improbability" of an earthquake destroying London, as it would so obviously fly in the face of the "world-wisdom" or guidance immanent in nature, has been falsified in principle by the destruction of Tokyo.

respect of our human minds (and, from his own viewpoint, the "wider minds" of society, etc.) that his discussion of volitional transformation has any point. In short, the contradiction stands between these two positions, and can only be eliminated by the rejection of one or the other: and, in the quotation just cited, we have indication as to which of the two Bosanquet really rejects. But, in rejecting it, he is left without any account of his "pristine nature", or of a nature "solid" enough to serve as the "instrument of the Absolute for the moulding of minds". Thus, if nature is simply the fragmentary and disconnected, then it is not nature, but mind—or volitionally transformed, connected and unified nature—which moulds mind. This is Bosanquet's actual view, since, when his realist mood is in abeyance, he is no less emphatic than Bradley in insisting that nature as such is a "mere abstraction"—that in reality there is no such thing, but only grades of relatively connected and "individualised" nature. Unification of nature about one "subjective centre" is never the appropriation of "new" material: it can never be more than a robbing of Peter to pay Paul. It is meaningless therefore to describe nature as an *instrument*, since all character and form—on Bosanquet's view—belong to it simply as imposed upon it, or as it is already the "content" of a mind.

Again, if the *prima facie* self-contained nature (e.g. the pre-organic world) from which our minds emerge is itself a "second" or "volitionally transformed" nature, and yet is manifestly not transformed, unified and guided by *our* minds, by whose is it? Not by a "dim-subjectivity" of its own: "our minds", he insists of nature, "are its own mind".¹ In this connection Bosanquet sometimes writes as if the guidance were by the Absolute mind, but this type of utterance, while it goes a long way toward making his philosophy plausible, is not consistent with his general metaphysical position. This teleological or theist view he rightly repudiates when he is strictly interpreting his absolutism. The Absolute, for Bosanquet, is not (as I have remarked above) another super-eminent mind over and above all finite minds, but is the individual totality of finite minds which are "constituents of its energy". It is not correct, therefore, to say (when expounding Bosanquet's doctrine) that reality consists of the Absolute spirit and finite spirits; the true version is, there is the Absolute, or there are finite minds, either being a complete account of reality, the former from the point of view of reality, the latter from the side of its appearances. The

¹ *Principle*, p. 370.

only resort is, as I have suggested, to unknown finite minds, of which such seemingly self-contained nature is the "determinate and ordered object". To further points arising from Bosanquet's half-recognition of teleology I shall return below.

III.

Concerning (δ) and (ϵ) little need be said, since to assert "striking opposition" and "indistinguishability" of the same subject is too obviously self-contradictory to require pointing out. If nature and mind are—as his realist vein and common sense suggest—strikingly opposed, then they cannot also be "all but indistinguishable". Again, if we ask which side Bosanquet will really stand by, we may be confident that he will choose the latter. And, taken away from its paradoxical association with a contradictory, this points directly towards pan-psychism. The "subjective centre" monopolises the picture. The distinction between nature and mind becomes one merely of "points of view": but the "objective aspect" has no point of view of its own, and so the only *view* at all is that of the subject. The rest is abstraction. But if so, then what—to turn Bosanquet's question upon himself—"becomes of the material incidents of our life—of our food, our clothes, our country, our own bodies"?¹ Since "material" has reality only in the sphere of (as the "content" of) some mind or experience, of *whose mind* is my body the "content"? If one is prepared to remain upon the low road of pure phenomenalism, one is safe from even such awkward inquiries, but Bosanquet is not willing to remain on this level, his answer in general being the unassimilable realist vein to which I have drawn attention.

It may be further objected that (δ) is incompatible with (η) in so far as indistinguishables can scarcely be either *complementaries* or *condition and conditioned*. And the two assertions made in (η) seem likewise exclusive of one another. On many views nature is a condition of mind, and on some, mind is complementary to nature (in the sense of completing it or being its $\tau\acute{\epsilon}\lambda\omicron\varsigma$); but if nature is the *condition* of mind, on what view can it also be its *complement*?

¹ Cf. (κ). But if it really does not matter much whether we say 'the pure mind' or 'the pure nature of things', does it matter much whether or not we stickle for the 'material incidents' of mind?

IV.

Consideration of the following passage may throw some light upon Bosanquet's general method :

"The content of mind is the content of Nature because Nature is the instrument or element of the Absolute by which the mind's own 'nature' is communicated to it. On the other hand, the content of Nature is the content of mind, because it is only in the sphere of mind that Nature reveals to begin with, anything at all, and *a fortiori*, that she reveals the possibilities of life and spirituality that are shut up in her."¹

It is apparent that the key term "content" does not mean the same in the two statements. The meaning of the term in the first sentence is clear enough. It is intelligible to speak of the content of mind as the content of nature, for—as Bosanquet observes—the mind's own "nature" is drawn from nature. Content here means "nature" as distinguished from existence. But in the second sentence, the term content means something other than this: it refers not to "nature" but to knowledge; and the sentence seems to me to be translatable thus: the content of Nature is the content of mind because it is only in the mind that knowledge of its character arises. But this is plainly a *non sequitur*. It is manifest that only to a mind can nature reveal anything, but from this we can conclude nothing as to the *being* of nature apart from such revelation. Its content is revealed to mind, but is not therefore—unless the idealist conclusion be simply assumed at the point where it is most in question—the content of mind.² The conclusion *a fortiori* appears to be no more solidly grounded than in the same assumption. From the pre-organic world—which, it will be remembered, Bosanquet accepts as fact³—life and eventually finite subjective mind emerges. Thus, to these minds, nature reveals the possibilities which were "shut up in her". From this he concludes

¹ *Principle*, p. 367.

² In this philosophy there is no argument for the idealist principle. The nearest approach to argument is as follows: the alternative opinions "depend upon the fallacy that to find the reality independent of experience you must have recourse to a reality apart from experience" (*Logic*, vol. ii. 2nd ed., p. 302). But against him we may hold that experience is falsely analysed unless it is taken to be or to involve the apprehension of a reality which is not itself experience. Obviously one cannot *find* anything without *finding* it: but why should the *found* be identified with the *finding*?

³ In fairness to Bosanquet it should be recalled that "fact" is not an honorific designation. At bottom it turns out to belong to the realm of self-contradictory appearance.

that the content of nature is the content of mind—by which I presume him to mean that this prior nature is thereby shown to be already the “determinate object” of minds such as ours. It does not follow. And should we grant (which I do not) that this nature is simply and solely the object of some subjective mind or minds, the presumption is all against this merely “objective factor” in a “whole of experience” giving birth to further “wholes” (even if minor wholes) or subjective centres. Furthermore, on Bosanquet’s principles, the possibilities of nature cannot be (or ever have been) “shut up in her”; for an externality is always the externality of some “inwardness” or mind. The only change which can befall nature in this system is—so to say—a change of master. What is “revealed” “manifested” or “appropriated” through one mind or set of minds can, according to this doctrine, be revealed, etc., through another set of minds. Bosanquet’s language, then, in this situation again, is misleading.

V.

Perhaps I may take this opportunity, also, of indicating an important modification of Bosanquet’s “objective” idealism, which appears in the course of his argument.

“Independent being”, he writes, “we cannot possibly ascribe to it (nature) . . . for . . . all the arguments for the impossibility of independence in primary, secondary, and tertiary properties . . . retain their force.”¹

But are these arguments a legitimate part of his armoury? Do they not rather belong to the type which leads either to phenomenalism or to subjectivism? They follow from the acceptance of an “epistemological mystification” (his own phrase) which Bosanquet expressly sets aside in the broad sweep of his assumption of the correlativity of knowledge and reality. In detail we may ask, is this argument compatible with (d) and with the rest of the passage there cited? It runs,

“Nature, the world of sense perception, has being in its own right, and the splendour and values which we seem to contemplate directly are apprehended by us as they truly are.”

The only manner in which, in terms of the former passage, this “splendour and values” can be as they truly are, is by being constituted by the minds that contemplate them. At bottom it must be conceded that this is what Bosanquet does mean. Every

¹ *Principle*, p. 370.

knowing mind adds something to the reality of what it knows, and in the absence of any knowing or, more broadly, experiencing mind, there is no reality whatsoever. We may say that in Bosanquet's map of the world there is no *terra incognita*, for there is no *terra* until it is *cognita*. How this applies to "primary, secondary and tertiary properties" he does not say. Supposing (which I am not at all sure is the case) I do *add* the secondary and tertiary "properties" to what I perceive; whose mind is responsible for the primary qualities? or for the residue of reality which Bosanquet is nowhere complete subjectivist enough altogether to repudiate? ¹ This residue must be the work of the angels.

It should also be emphasised that those who dispute Bosanquet's doctrine that nature is dependent upon knowledge (or experience) are not committed to the opinion that nature is "independent". It may very well be (indeed it seems to me that no other view is defensible) a dependent form of reality without being dependent upon its being known (or *felt*).² According to theistic belief, for example, nature is a realm dependent upon the creativity of God. God is also, in some sense, said to be omniscient; but His creativity is not simply identified with His omniscience.

VI.

It is manifest that much of the difficulty of Bosanquet's doctrine of nature arises from his assumption that the relation of man and his environment, of mind and of nature, is simply the same as that of an outside and of an inside. Nature is taken *ab initio* to be "externality", a term which predetermines the character of mind, which must obviously be "internality".³ The elementary fact that there can be no outside without an inside, or *vice versa*, enables Bosanquet to juggle with nature and mind with all the ease that arises from this convenient correlativity (see especially such passages as (η), (θ) and (κ)).

¹ See, e.g., *Principle*, p. 361 n. *my italics*. "The subjective mind which has perceived and which conceives them" (physical objects) "being destroyed, their existence would certainly be *pro tanto* diminished, though not necessarily destroyed." This last suggests the residue I refer to.

² Feeling (since it is supposed to lack the defect of division into 'subject-object') is said to be the type of the experience of the Absolute.

³ His only qualification of the metaphor is to insist that mind must not be considered as merely "the co-ordinate contrary of externality", but as somehow superordinate. The "inside" is superior to the "outside". But if so, then to me it seems that the metaphor simply breaks down, and that the juggling noted above must therefore be pointless.

"Externality", he writes, "can subsist only as subordinate to inwardness ; but inwardness can subsist only in the conquest of externality."¹

Were nature and mind clearly correlative, and precisely interchangeable with externality and internality, then the statement to which I have taken exception, *viz.*, "Nature exists only through finite minds : but finite minds exist only through nature", would be intelligible. But what evidence have we that the easy analogy holds at all ? A theory based upon it seems to me entirely verbal.

Akin to this assumption is the further unquestioned belief that "nature-mind" is identical with "subject-object". Now, in so far as nature enters into knowledge or more simply, is known, it is the "object" of knowledge, or more simply, is what is known. But because (as has too often been repeated to need further emphasis) nothing is *known* except as it is known, this is no reason for asserting that nothing *is* except as it is known. These two attitudes combine, I think, in all such statements of the 'objective idealist' axiom as the following, which stands in the Introduction to Bosanquet's *Logic* :

"I am speaking all through of being as it is for knowledge ; not of the ontological, and to my mind, fruitless question how being can be apart from a consciousness."²

The question is certainly fruitless, insofar as the would-be knower's mind, at least, is brought into some *rappor*t with what he seeks to know, but far from fruitless in the sense that the *presupposition* of knowing is that there is something to know which is not the knower, and that the *ideal* of knowing is the exclusion from knowledge of all subjective bias and modification.

Nature is only known through mind, but this does not dub nature mental—as not a few distinguished scientists have hastily concluded, and as Bosanquet seems to hold.

VII.

What, then, is the motive of Bosanquet's singularly vacillating treatment of nature ? It is one, I believe, with which many of us fully sympathise, and which finds expression in such observations as this ;

"It is intolerable that Nature, through which alone spirit attains incarnation, should be treated as a directionless material."³

¹ *Principle*, p. 76.

² *Logic*, vol. i., 2nd ed., p. 21. *My italics.*

³ *Principle*, pp. 133-134.

Some sort of teleology is needed to interpret a nature which lies at the root of, and which environs, spiritual life and achievement: but, in the context of Bosanquet's theory, to my mind, this point loses all significance. The same nature "through which alone spirit attains incarnation" is that which "exists only through finite minds". This makes of *incarnation* not a mystery, but a non-significant sound. And, since Bosanquet repudiates teleology in favour of individuality,¹ what, we may ask, are we to understand by "direction" and "directionless"? The only direction indicated in Bosanquet's universe is the tendency toward individuality:² but, behind the scenes—so to speak—there is the contrary direction determined by dissociation. In other words, the upward *nisus* upon which Bosanquet lays so much stress is only intelligible as part and parcel of a theory which insists upon the unchanging character of the whole, if there is also a 'back-stairs' downward or degenerative movement. The Absolute is changeless, without history, capable of neither amplification nor diminution. Thus the constituent energy of the finite must remain constant: it cannot undergo amplification or diminution, except as a balance is maintained between the two. Direction, therefore, must be cancelled out. The "marvellous work of guidance" in nature is "directed" toward the maintenance of reality "As it was in the beginning, is now, and ever shall be".³ The whole poignancy of the commerce between nature and spirit—a commerce which in certain moods Bosanquet so movingly describes—is made void if, in his manner, we reduce it to a feature in a timeless tension of association and dissociation.

Throughout his writing Bosanquet is emphatic that there is a "guidance" operative in things. He names it the "teleology below consciousness", the "world-wisdom". "It seems ridiculous to deny", he insists, "that the reactions which made the world habitable are self-directed." Self-direction, however, is a character of mind. But this guidance is not effected by "finite subjective mind". Then (once more) by what minds? From his exposition of the stages of the development of mind, we gather

¹ *Principle*, pp. 230 ff.

² For the difficulties involved in the principle of individuality see, e.g., my articles in *MIND*, Nos. 158, 159.

³ Notice, e.g., the frank assertion on this point, in *Principle*, p. 243. "Not that the infinite being can lose and regain its perfection, but that the burden of the finite is inherently a part . . . or rather, an instrument of the self-completion of the infinite." Since the Absolute *needs* the finite it is surely euphemism to say, in another connection, that the Absolute "allows minor worlds . . . to constitute its union with externality, which union is itself" (*Principle*, p. 321). This is not 'grace' but mere necessity!

that the direction must be by finite minds not yet "subjective" or aware of themselves. "Life", we are told, is a less "individual" but still eminent exhibition of the "spirit of totality" which reaches a new level of operativeness in finite self-conscious mind. "Material things", then, or the "pre-organic world", must occupy a level of individuality lower than life or 'subjective mind'. They must exhibit the same principle in a lower degree. But this points, surely, toward pan-psychism. This, however, Bosanquet would not admit, but would retreat to the pseudo-naturalist position instead, from which, in turn, he would escape to the pseudo-pan-psychism. These two purport together to maintain and to express the omniscient "Principle of Individuality".

I accept the appearance of 'direction' to which Bosanquet—inconsistently, I have sought to show—appeals, but would suggest that it need not be "by the material" but "of the material". This requires as a factor in nature what Whitehead has recently called "Imposed Law"; but this law need not simply exclude all immanent law. I am not concerned in this paper even to outline a positive theory of nature or of mind, but it seems to me clear—largely in consequence of the study of Bosanquet—that no light can be thrown upon the relation of nature and its directing principle from reflection upon the 'subject-object' relation in knowledge. It is possible that the teleological appearance of nature, taken together with other-than-speculative, ethical, æsthetic, or religious intuitions, may prompt us (as it has prompted many) to believe that nature is directed and dependent: we shall be justified on the analogy of our own experience of direction in ascribing such ultimate direction to a mind; but this in no way necessitates the conclusion that our characteristic relation to nature—which is that of use and knowledge—is any analogy for the relation of God and nature.

V.—DEMONSTRATION OF THE IMPOSSIBILITY OF METAPHYSICS.

By A. J. AYER.

FOREWORD.

THE views expressed in this paper are not original. The work of Wittgenstein inspired it. The arguments which it contains are for the most part such as have been used by writers in *Erkenntnis*, notably by Moritz Schlick in his *Positivismus und Realismus* and Rudolf Carnap in his *Überwindung der Metaphysik durch logische Analyse der Sprache*. But some may find my presentation of them the clearer. And I hope to convince others by whom the work of Wittgenstein and the Viennese school has so far been ignored or misunderstood.

DEFINITION OF METAPHYSICS.

My purpose is to prove that any attempt to describe the nature or even to assert the existence of something lying beyond the reach of empirical observation must consist in the enunciation of pseudo-propositions, a pseudo-proposition being a series of words that may seem to have the structure of a sentence but is in fact meaningless. I call this a demonstration of the impossibility of metaphysics because I define a metaphysical enquiry as an enquiry into the nature of the reality underlying or transcending the phenomena which the special sciences are content to study. Accordingly if I succeed in showing that even to ask whether there is a reality underlying the world of phenomena is to formulate a bogus question, so that any assertion about the existence or nature of such a reality is a piece of nonsense, I shall have demonstrated the impossibility of metaphysics in the sense in which I am using the term. If anyone considers this an arbitrary definition, let him refer to any work which he would call metaphysical, and consider how it differs from an enquiry in one of

the special sciences. He will find, not that the authors are merely using different means to derive from the same empirical premises the same sort of knowledge, but that they are seeking totally different types of knowledge. The metaphysician is concerned with a reality transcending the phenomena about which the scientist makes his generalisations. The metaphysician rejects the methods of the scientist, not because he believes them to be unfruitful in the field in which the scientist operates, but because he believes that by his own metaphysical methods he will be able to obtain knowledge in his own metaphysical field. It will be shown in this paper not that the metaphysician ought to use scientific methods to attain his end, but that the end itself is vain. Whatever form of reasoning he employs, he succeeds in saying nothing.

COMPARISON WITH KANT'S PROCEDURE.

That the speculative reason falls into self-contradiction when it ventures out beyond the limits of experience is a proposition maintained by Kant. But by his formulation of the matter he is committed to a view different from that which will here be maintained. For he implies that there is a transcendent reality, but the constitution of our speculative reason is such that we cannot hope to gain knowledge of it: he should therefore find no absurdity in imagining that some other being, say a god, had knowledge of it, even though the existence of such a being could not be proved. Whereas on our view to say that there is or that there is not a transcendent reality is to utter a pseudo-proposition, a word-series empty of logical content: and no supposition about the knowledge of a higher reality possessed by a higher being is for us even a significant hypothesis. The difference between the two views is best expressed by saying that while Kant attempted to show that there were certain problems which the speculative reason was in virtue of its own nature incapable of solving, our aim is to show that these are not genuine problems.

No criticism of Kant's transcendental philosophy will be undertaken in this paper. But the method by which we demonstrate the impossibility of metaphysics, in the sense in which Kant too held it to be impossible, serves also to show that no knowledge is both synthetic and *a priori*. And this is enough to prove the impossibility of metaphysics, in the special sense which Kant reserved for the term, though it in no way discredits the excellent pieces of philosophical analysis which the *Critique of Pure Reason* contains.

FORMULATION OF A CRITERION OF SIGNIFICANCE.

The method of achieving these results lies in the provision of a criterion by which the genuineness of all *prima facie* propositions may be tested. Having laid down the conditions which must be fulfilled by whatever is to be a significant proposition, we shall find that the propositions of metaphysics fail to satisfy the conditions and are therefore meaningless.

What is it, then, that we are asking when we ask what is the meaning of a proposition? I say "ask the meaning of a proposition" rather than "ask the meaning of a concept," because questions about the meaning of concepts reduce themselves to questions about the meanings of propositions. To discover the meaning of a concept we form its corresponding primary proposition, *i.e.* the simplest proposition in which it can significantly occur, and attempt to analyse this. I repeat "what is it that we are asking when we ask what is the meaning of a proposition?" There are various ways in which the correct answer can be formulated. One is to say that we are asking what are the propositions to which the proposition in question is reducible. For instance, if "being an amphisbæna" means "being a serpent with a head at both ends," then the proposition "X is an amphisbæna" is reducible to (or derivable from) the propositions "X is a serpent" and "X has a head at either end of its body". These propositions are in turn reducible to others until we reach the elementary propositions which are not descriptive at all but ostensive.¹ When the analysis reaches its furthest point the meaning of the proposition can no longer be defined in terms of other propositions but only pointed to or shown. It is to this process that those philosophers refer who say that philosophy is an activity and not a doctrine.

Alternatively the procedure of definition may be described by saying that to give the meaning of a proposition is to give the conditions under which it would be true and those under which it would be false. I understand a proposition if I know what observations I must make in order to establish its truth or falsity. This may be more succinctly expressed by saying that I understand a proposition when I know what facts would verify it. To indicate the situation which verifies a proposition is to indicate what the proposition means.

APPLICATION OF THE CRITERION.

Let us assume that some one says of my cat that it is corylous. I fail to understand him and enquire what circumstances would

make it true to say that the cat was corylous. He replies "its having blue eyes". I conclude that in the sense in which he uses the word corylous "X is corylous" means "X has blue eyes". If he says that, although the fact that my cat has blue eyes and no other fact makes it true to say that it is corylous, nevertheless he means by "corylous" something more than "blue-eyed," we may infer that the use of the word "corylous" has for him a certain emotional value which is absent when he merely says "blue-eyed". But so long as its having blue eyes is all that is necessary to establish the truth of the proposition that something is corylous, and its having eyes of another colour all that is necessary to establish its falsehood, then "having blue eyes" is all that "being corylous" means.

In the case when something is called corylous and no description or indication can be given of the situation which verifies the proposition, we must conclude that the assertion is meaningless. If the speaker protests that he does mean something, but nothing that mere observation can establish, we allow that he has certain feelings which are in some way connected with the emission of the sound "corylous": and it may be a matter of interest to us that he should express these feelings. But he does not thereby make any assertion about the world. He utters a succession of words, but they do not form a genuine proposition. His sentence may provide good evidence of his feelings. In itself it has no sense.

So in every case where we have a series of words which seems to be a good grammatical sentence, and we wish to discover whether it really makes sense—*i.e.*, whether it expresses a genuine proposition—we must consider what are the circumstances in which the proposition apparently expressed would be called true or false: what difference in the world its truth or falsity would entail. And if those who have uttered it or profess to understand it are unable to describe what in the world would be different if it were true or false, or in any way to show how it could be verified, then we must conclude that nothing has been asserted. The series of words in question does not express a genuine proposition at all, but is as much a piece of nonsense as "the moon is the square root of three" or "Lenin or coffee how". The difference is merely that in some cases where a very slight transformation of the phrase, say the alteration of a single word, would turn it into a propositional sign, its senselessness is harder to detect.

MEANINGLESSNESS OF EVERY METAPHYSICAL ASSERTION.

In this way it can quickly be shown that any metaphysical assertion is nonsensical. It is not necessary to take a list of metaphysical terms such as the Absolute, the Unconditioned, the Ego, and so forth, and prove each of them to be meaningless : for it follows from the task metaphysics sets itself that all its assertions must be nonsense. For it is the aim of metaphysics to describe a reality lying beyond experience, and therefore any proposition which would be verified by empirical observation is *ipso facto* not metaphysical. But what no observation could verify is not a proposition. The fundamental postulate of metaphysics "There is a super- (or hinter-) phenomenal reality" is itself not a proposition. For there is no observation or series of observations we could conceivably make by which its truth or falsehood would be determined. It may seem to be a proposition, having the sensible form of a proposition. But nothing is asserted by it.

An example may make this clearer. The old conflict between Idealism and Realism is a fine instance of an illusory problem. Let us assume that a picture is unearthed, and that the finder suggests that it was painted by Goya. There are definite means of settling this question. The critics examine the picture and consider what points of resemblance it has to other works of Goya. They see if there is any contemporary or subsequent reference to the existence of such a work—and so on. Suppose now that two of the experts have also read philosophy and raise a further point of dispute. One says that the picture is a collection of ideas (his own or God's) : the other that its colours are objectively real. What possible means have they of settling this question ? Can either of them indicate any circumstances in which to the question "are those colours a collection of ideas ?" or to the question "are those colours objective sensibilia ?" the answer "yes" or "no" could be given ? If they cannot then no such questions arise. And plainly they cannot. If it is raining now outside my window my observations are different from what they would be if it were fine. I assert that it rains and my proposition is verifiable. I can indicate the situation by which its truth or falsity is established. But if I ask "is the rain real or ideal ?" this is a question which no observations enable me to answer. It is accordingly not a genuine question at all.

It is advisable here to remove a possible source of misunderstanding. I am not maintaining that if we wish to discover

whether in a *prima facie* proposition anything is really being asserted, we must consider whether what seems to be asserted is practically verifiable. As Professor Schlick has pointed out, it makes perfectly good sense to say "there is a mountain 10,000 feet high on the other side of the moon," although this is a proposition which through practical disabilities we are not and may never be in a position to verify. But it is in principle verifiable. We know what sort of observations would verify or falsify it. If we got to the other side of the moon we should know how to settle the question. But the assertions of metaphysics are in principle unverifiable. We may take up any position in space and time that our imagination allows us to occupy, no observation that we can make therefrom makes it even probable in the least degree that any answer to a metaphysical question is correct. And therefore we conclude that there are no such questions.

METAPHYSICAL ASSERTIONS NOT HYPOTHESES.

So the conclusion is not that metaphysical assertions are uncertain or arbitrary or even false, but that they are nonsensical. They are not hypotheses, in the sense in which general propositions of law are hypotheses. It is true that assertions of such general propositions are not assertions of fact in the way that assertions of singular propositions are assertions of fact.² To that extent they are in no better case than metaphysical assertions. But variable hypotheticals (general propositions of law) make sense in a way in which metaphysical assertions do not. For a hypothesis has grounds. A certain sequence of events occurs and a hypothesis is formulated to account for it—i.e., on the strength of the hypothesis, when we make one such observation, we assume that we shall be able to make the others. It is the essence of a hypothesis that it admits of being used. In fact, the meaning of such general propositions is defined by reference to the situations in which they serve as rules for prediction, just as their truth is defined by reference to the accuracy of the predictions to which believing them gives rise. A so-called hypothesis which is not relevant to any situation is not a hypothesis at all. As a general proposition it is senseless. Now there is no situation in which belief in a metaphysical proposition bridges past and potential observations, in the way in which my belief in the poisonousness of arsenic connects my observation of a man's swallowing it with my expectation that he will shortly die. Therefore metaphysical propositions are not hypotheses. For they account for nothing.

HOW METAPHYSICS HAS ARISEN. DEFENCE AGAINST THE OBJECTION FROM PIETY.

There may be some who find no flaw in our reasoning and yet hesitate to accept the conclusion that all metaphysical assertions are nonsensical. For such hesitation there appear to remain three grounds. First, a failure to understand how, if they are unintentionally nonsensical, such assertions ever come to be made. Secondly, a doubt whether metaphysical assertions, if nonsensical, could be made so often. Thirdly, a reluctance to admit that so many men of great intellect could have made a number of what they considered to be true and important statements, which were in fact not statements at all. I proceed to answer these objections in the order in which they have been stated.

(1) The fact that sentences may appear grammatically on a level and yet have quite different logical forms makes it easy for philosophers to formulate bogus questions. For example, "he suffers from an imaginary illness" is grammatically on a par with "he suffers from a severe illness". And philosophers are in consequence misled into asking what sort of being imaginary objects have, on the ground that they must have some sort of being in order to be imaginary, since what has no being can have no property. But in fact, as a minority of distinguished philosophers have seen, being imaginary is not a property like being severe; and "his illness is imaginary" means "he is not ill although he thinks he is". When the proposition is so formulated, the bogus question "what is the ontological status of an imaginary illness?" does not even seem to arise. The sentence "his illness is imaginary" is of a type calculated to lead philosophers astray; but it is translatable into a sentence wherein no such danger lies. The question "what type of object is an imaginary object?" and the answer sometimes given to it that "it is a subsistent entity" are both pieces of sheer nonsense.

The case of the word "subsist" illustrates how words which have meaning in a certain context are used by philosophers in a context where they are meaningless. The sentence "he subsists on a small income" makes perfectly good sense. "Subsists" here means "manages to exist," "keeps himself alive". Philosophers, falling into the trap mentioned above, wish to assert that imaginary and illusory objects have some sort of being. It seems a self-contradiction to say that they exist. But somehow or other they "manage to keep alive". Therefore it is said that they subsist. But in this usage the word "subsist" is nonsense. It is a mere symbol of confusion.

There is a further class of words which are coined as a direct outcome of logical mistakes and possess no meaning from the outset. Such is the word "being" used as a substantive. This error originated with the Greeks. Because where X is an incomplete symbol it makes sense in some cases to say "X exists" (*ἔστιν*) and existence is wrongly assumed to be a property, it seems legitimate to talk about the being (*οὐσία*) of X, just as one may talk about the cleverness of X where it makes sense to say that X is clever. Once it is seen that "X exists" means not that a something X has a certain property "being" but merely that something is X-ish or is an X, the temptation to ask questions about "being" disappears.

I believe that these are the ways in which all metaphysical assertions that are not mere rhapsodical outpourings can be shown to arise.

(2) One reason for which men have persistently succumbed to the temptation to assert something metaphysical is that they are not content to make observations and generalisations and predictions but desire also to express their feelings about the world. Literature and the arts afford the most satisfactory medium for such expression. Metaphysics results when men attempt to extrapolate their emotions: they wish to present them not as feelings of their own, but somehow objectively as facts; therefore they express them in the form of argument and theory. But nothing is thereby asserted. All that has happened is that the form of a rational enquiry has been used for the expression of emotions which more commonly find their outlet in a work of literature or art.³

Another motive for the construction of metaphysical systems arises from a man's desire to unify his knowledge. In the natural sciences one is not content with the discovery of some uniform sequence of events: one seeks also to explain it, that is, to show its occurrence to have been predictable from knowledge of some more general principle. The metaphysician feels this impulse. But, lacking either the patience or the ability to understand the propositions of natural science, being ignorant of the grounds on which the scientist's hypotheses are based and the uses which they serve, he postulates a new and superior kind of knowledge, obtainable by his own ready method of intellectual intuition. And succeeds in knowing nothing.

(3) We need not go to the length of saying that all the great men who have written books of metaphysics are poets who have chosen what seems to us an unsuitable medium of expression. For, in many cases, once the work has been made to shed its

metaphysical coating, pieces of genuine philosophising remain. For instance, Berkeley may be regarded not as one who denied the existence of matter, but as one who attempted to analyse the concept of a physical object. His merit is to have shown that when we make a proposition about a physical object we are giving some more complicated statement than the description of a single sense-datum. Similarly Locke, as Mr. Ryle has pointed out, deserves our gratitude for distinguishing our different types of enquiry, Leibnitz for maintaining that what is meant by a body's having a certain position in space is that it lies in certain spatial relations to other bodies, and so forth. Whereby it appears that the discovery that all metaphysical assertions are nonsensical is consistent with piety towards the great philosophers of the past.

JUSTIFICATION OF OUR PROCEDURE.

In sum, as metaphysical propositions are by definition such as no possible experience could verify, and as the theoretical possibility of verification has been taken as our criterion of significance, there is no difficulty in concluding that metaphysical propositions are meaningless. There is no escape from this conclusion, provided that we can show that our criterion is correct. Can we do this ?

If we assert that the meaning of a proposition consists in its method of verification, the proposition which this sentence would naturally be taken to assert would be a proposition about the meaning of the concept of meaning. So interpreted it would be an assertion about what was meant by the word "meaning" in one of its common uses ; and as such a significant empirical proposition. Observation of the linguistic habits of the class of people whose use of the word "meaning" the proposition was about would show it to be true or false : and whatever their linguistic habits were, they might logically have been otherwise. But this is not the proposition which in formulating our criterion we intended to assert. In our criterion we have something that is presupposed in any enquiry into the meaning of meaning, or any other philosophical enquiry, and therefore cannot appear as the conclusion of such an enquiry. For the business of philosophy is to give definitions. And in setting out to define meaning or any other concept we must adopt some rule according to which we conduct our enquiry, and by reference to which we determine whether its conclusions are correct. In formulating our criterion we are attempting to show what this rule should be. We cannot do more.

It may be doubted by some whether we can even do as much. They would say that the *prima facie* proposition in which we formulated our criterion was itself nonsensical, and that it only seemed to be significant because we expressed it in sentences which, like the one given just above, would naturally be understood in a way other than we intended them to be. What we really mean was something that cannot be significantly said. To adopt this standpoint is to follow the example of Wittgenstein, who at the end of his *Tractatus Logico-Philosophicus* asserts that the propositions contained in it are nonsensical. They are a means for enabling the sympathetic reader to "see the world rightly". Having profited by them he must discard them. He must throw away the ladder after he has climbed up on it. But it is not a secure standpoint. Having said something which on your own showing no one can say, you attempt to save your face by pretending you really have not said it. But if you admit that your propositions are nonsensical, what ground have you given anybody for accepting the conclusions that you deduce from them? If we admit that the proposition in which we attempt to formulate our criterion of significance is nonsensical, does not our whole demonstration of the impossibility of metaphysics collapse? We may be able to see that metaphysical propositions are nonsensical and by making a special set of nonsensical utterances we may induce others to see it also: but for the rest we must do as Wittgenstein recommends: wait until some one says something metaphysical and then show him that he has used certain symbols to which no meaning can be attached; and this would only prove that one more attempt to assert a significant metaphysical proposition had been a failure, not that no attempt could ever be a success.

Fortunately we can assert all that we need without entering the realm of the unsayable. The proposition "the way to discover whether a *prima facie* proposition has meaning, and what its meaning is, is to consider what experience would verify it" is a significant empirical proposition. It asserts that certain discoveries, in fact those discoveries about the meaning of concepts which it is the business of philosophy to make, may be made and checked by using a certain criterion. We test the validity of the criterion by seeing if the results obtained by means of it are accurate. The difficulty is that in all doubtful cases, which means in very nearly all cases, we have recourse to the criterion to decide whether some suggested definition is correct. This procedure is obviously circular. What saves it from being wholly vicious is the possibility of determining

psychologically in certain cases that a proposition is significant without it being necessary to apply the criterion. There are some *prima facie* propositions which by universal agreement are given as significant and some expressions which are agreed to be meaningless. Trusting our criterion if it accepts the former class and rejects the latter, we apply it to such doubtful cases as that of the propositions of metaphysics, and if they fail to satisfy it we pronounce them nonsensical. If we were to take as our criterion of significance the possibility of influencing action we should allow metaphysical propositions to be significant, but we should lose faith in our criterion when we found that it also admitted the significance of expressions which were universally agreed to be meaningless: since there is practically no limit to what can influence action.

If therefore a philosopher maintains that our criterion is too narrow and that metaphysical propositions are significant, it is for him to put forward a more liberal criterion: one that allows the significance of metaphysical propositions yet is not so liberal as to allow the significance of expressions such as "jealousy pronoun live" or "siffle hip brim" which are agreed by all parties to be meaningless. Until he can do this, he has no right to object to our procedure and no means of escaping our conclusions.

¹ (p. 337). This article was written over a year ago; and I have since abandoned the view that there are elementary or purely ostensive propositions, for reasons which I have given in an article published in *Analysis*, Vol. I., No. 1. I have not troubled to alter this passage, because the reference to elementary propositions is wholly irrelevant to my main argument.

² (p. 340). I now hold that all empirical propositions are hypotheses. And this means that none of them are conclusively verifiable. It follows that when we say that a proposition, other than a tautology, is significant if and only if it is empirically verifiable, we must be understood to be using the term 'verifiable' in its 'weakest' sense. In other words, the question we must ask about every putative proposition is not 'What observations would make its truth or falsehood logically certain?' but simply 'What observations are relevant to the determination of its truth or falsehood?' 'What observations would lead us to allow or deny it a place in our system of accepted propositions pending the production of further evidence?' It is because no answer can be given to these questions, in the case of metaphysical assertions, that these assertions are held to be meaningless.

³ (p. 342). For an elaboration of this point see my article on "the Genesis of Metaphysics" in *Analysis*, Vol. I., No. 3.

VI.—DISCUSSIONS.

ON THE USE OF "UNIVERSE".

IN a recent discussion, Dr. Schiller has argued against the doctrine of the unity of the universe.¹ He establishes a *prima facie* case by adducing empirical exemplifications of plural universes, and then asserts more generally that reality "persistently breaks up into a plurality of wholes". Dr. Schiller's contentions are, to my mind, vitiated by a confusion of terms which conceals the irrelevance of his chief arguments. I shall establish this by analysing them one by one.

"What reason", asks Dr. Schiller, "is there, after all for *not* treating the notion of universe as one that receives exemplification, actually or potentially, in a plurality of cases, 'worlds', or 'universes'?" Scientific vocabulary abounds with a pluralist usage of the term 'universe', and logic permits an indefinite number of universes of discourse. Suppose, even, that reality were given as a unique whole; that would still constitute "an *empirical* fact about the real and not a peculiarity of the conception of 'universe'". The hypothesis of several universes remains, therefore, meaningful.

Now, two meanings for the term 'universe' must be distinguished, a physical and a metaphysical. A physical universe is defined by a field of bodies connected by definite physical relations. Physical relations are those expressed by laws of behaviour like the law of gravitation. They are statements of functional variation: for example, if the distance between two masses is decreased, we may calculate the increase in gravitational force. There is nothing necessary about a physical universe; there is no formal contradiction in supposing that the physical relationships might be other than they are. One may legitimately speculate on the possible existence of regions where different laws obtain. We could also conceive of a group of bodies which influenced each other in no way at all. These Leibnizian physical monads would stand as isolated universes, and for all we know, our own stellar universe is possibly a self-contained system, physically aloof from unknown universes beyond.

But a physical universe is not necessarily co-extensive with or exhaustive of the metaphysical universe. Take the various physical systems, independent though they be, and they are all subsumed under the metaphysical universe. The latter is a class defined by

¹ Cf. MIND, Oct. 1933, p. 501.

some such predicate as "existent entity"; anything which exists, be it particle of matter, bit of space, or mental entity, is a member of this class. Membership in the metaphysical universe does not imply either the internal or external relatedness of the given entity to other entities. To ask whether there can be several such universes is to pose a meaningless question, because the metaphysical universe is, by definition, the class of *all* existents, and this class, when divided, is no longer exhaustive.¹

Look here, says Dr. Schiller, you are assuming "that the totality of reality can only be constituted in one single way. But reality can evidently be combined into wholes on a great variety of principles; to each of these ways of composing a whole a specific totality of reality would be relative; and so each would yield a distinct 'universe'." Well, I should like to point out that Dr. Schiller's totality of reality is exactly my all-inclusive metaphysical universe. The subsequent remarks assume that all the members of this totality are characterised by additional common predicates. These alternative universes are however extensionally equivalent, that is, each of the intensional principles applies to the same set of entities. Alternative universes are merely additional metaphysical truths about an identical collection of existents.

Dr. Schiller maintains further that "even after we have formed a conception of a whole, the question of whether it can be exemplified in the real known to us, would remain over untouched". Now, every real known to us is a member of the class of existents. Furthermore, if there were no reality except the reality revealed to us, what would follow is that this realm is exhaustive of the metaphysical universe. On the other hand, if there were no reals at all, a world of absolute nothingness, the conception of the metaphysical universe would still be legitimate. For in that case, it would be a class with no members, a null class, a universe deprived of all reality, physical, mental or what you will. Nobody believes that this null class describes our universe, but the metaphysical category strives to embrace all possibility and generality. Likewise, it is not a valid argument to insist that the "verbal meaning of 'universe'" is prejudicial to scientific investigation. The definition of the metaphysical universe does not stipulate that all reality is electrical, mechanical, mental, or unknowable. A universal category imposes no particular limitations.

Dr. Schiller's subsequent arguments, though irrelevant, are examples of instructive fallacies. Thus, he seeks to show that attempted syntheses of the 'whole' reveal adverse facts. "In its spatial aspect the world is plainly not a whole; it seems to have no shape and no determinate size." The presupposition is that all

¹ It would seem, at first, that serious obstacles to this notion are interposed by the theory of types. By careful definition, however, the difficulties may be avoided. Dr. Schiller's discussion omits this aspect of the problem.

wholes must have a shape and a determinate size. But to some wholes the category of shape is inapplicable, and those which are infinite have no determinate size (in Dr. Schiller's sense). Physical space may be non-euclidean so far as the geometrical description of the paths of light rays goes; but this does not confute the existence of a Democritean, infinite space. Time is declared to be "even more intractable", and "quite incapable of being formed into a whole. . . . So to get the real into the shape of a universe, its temporal aspect must be pronounced 'unreal'". This contention has no cogency. Time may be defined as a class of durations, and this class is infinite. However, the class of all durations is not itself a duration. The reality of time as progressive duration is in no way denied; their likeness as durations does not annihilate the durational quality. Also, the class of durations, past and present is necessarily incomplete. To formulate thus the reality of the future as the durations which have not yet been would be impossible unless we had priorly recognized the abstract durational predicate which makes past, present and future elements in one temporal process.

Dr. Schiller concludes his onslaught by stating that metaphysical systems deal with the unreal in two undesirable ways. Either they exclude much of ordinary reality or they open the "floodgates to a very deluge of 'unreal', 'universes'". I deplore with Dr. Schiller the errors of past philosophical systems, their denials of reality to every-day phenomena. Let us remember, however, that the word 'unreal' has two kinds of meaning. The epistemologist who judges dreams 'unreal' often means that dreams do not fit into a scheme of public knowledge, or that if you act on the basis of dreams, you will be greatly misled. The epistemological 'unreality' of dreams, however, assumes their metaphysical reality; otherwise the discussion would be meaningless. What sort of metaphysical reality they possess remains a problem for later inquiry. It takes an honest metaphysician to build a system whose very marrow is strained by the grasp it retains on conventional 'unrealities'. He, of all people, is not to be blamed for having made the world as complicated as it is.

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MR. STACE'S "REFUTATION OF REALISM".

IN an article in *MIND*, vol. xlii., No. 170, Mr. Stace claims to have refuted realism. We believe that his attempt is unsuccessful, and in support of this judgment we submit the following observations.

By "realism" Mr. Stace means the view that "some entities exist without being experienced by any finite mind" (p. 146); and he argues that there is no more reason for believing this proposition than there is for believing that there is a unicorn on the planet Mars (pp. 146-147). Since, he contends, it is obvious that we cannot have sense-perception of an unperceived object it follows that we could only prove the realist belief by means of an inference, either deductive or inductive. But the above proposition can be established neither inductively nor deductively, and therefore ought not to be believed. Mr. Stace considers and rejects several arguments which have been used in favour of realism, and concludes that no importance can be attached to attempts to found realism on "instinctive belief" or "animal faith".

Concerning the possibility of an inductive proof Mr. Stace argues that, since there are no cases of the perception of unperceived existents there can be no ground for the conclusion, "some unexperienced entities exist". But, we would point out, the premisses of the induction in question would not be *unexperienced entities*, but such characteristics, if any, of *perceived entities* as lend weight to (or make probably true) the belief that some entities exist while unperceived. Thus we should expect Mr. Stace very carefully to consider what entities are perceived¹ (or otherwise cognised) and what are their characteristics. But this he does not do. Thus the example he gives of a "sense-object" is "a piece of paper" (p. 147 and *passim*). But on any account, surely, we must distinguish between sense-objects ("sense-data"—p. 155) and physical objects such as pieces of paper, for whereas the latter can be written on, folded, and sent to an editor, the former cannot. And since Mr. Stace appears undecided in this article as to whether the object of perception is a sense-object (sense-datum) or a physical object, it may be remarked that upon either view we find justification for belief in the existence of what transcends immediate awareness. If the object of perception—*i.e.*, entity perceived—is a sense-datum then (granting

¹ Mr. Stace's use of the word "perceive" is extremely wide. According to him we alike "perceive" sense-data, pieces of paper, laws and processes (*e.g.*, p. 151).

with Mr. Stace that we are aware of pieces of paper and reasonably believe them to exist while we are aware of them) it follows that our knowledge is not limited to things perceived: or if (as most realists believe) the object of perception is a physical thing (such as a piece of paper) it again follows that perception transcends sense-awareness, since we are certainly not aware of pieces of paper in just the same way as we are aware of a white patch. In either case we find it reasonable to believe in the existence of what is not immediately present in sense-awareness.

If we suppose that Mr. Stace's example of a "sense-object" (i.e., a piece of paper) is inadvertent, then we may ask him whether he has any more reason to believe *at all* in the existence of pieces of paper than he has to believe in a Martian unicorn. But he expresses belief in their existence (while he is "perceiving" them). We agree that it is reasonable to believe in the existence of pieces of paper, but must insist that this belief carries him beyond his own view of knowledge, which seems to be that we can only reasonably believe in the existence of "sense-objects" and of our own minds (p. 155).

We may now consider what is excluded by the limits Mr. Stace's refutation of realism sets to knowledge. (a) *His own mind*. It appears probable that his omnibus argument against the existence of unperceived entities would exclude knowledge of his own mind. Or, if Mr. Stace believes in his mind's existence even though he does not "perceive" it, he implies at least one (and perhaps, therefore, more than one) other source of knowledge. At most, however, Mr. Stace's position would allow him only to believe in the existence of his own mind *while he was knowing it*—however this knowledge came about. Perhaps he is content with this conclusion. But since Mr. Stace's body—on his view—is a "fiction", he is likely to have difficulties over his identity, and is not warranted in believing (having been to sleep meanwhile) that he is the same being as he was yesterday. (b) *Other minds*. It seems quite clear that Mr. Stace cannot reasonably believe in other minds at all: but he nevertheless does believe in them (e.g., "finite minds", "human minds", pp. 146-155). He also claims to have some knowledge about their nature (*viz.*, that they are "not static" but "active", p. 153). (c) We have noted above that Mr. Stace has no grounds for believing at all in *physical objects*, since knowledge of (or justified belief in) these involves more than mere awareness of sense-data. (d) *Causality*. Mr. Stace implies (p. 151) that a causal law operates "in the universe" when it is being observed. We doubt whether this concession is compatible with his denial of the existence of any entity, process or law which is not "perceived", for a causal connection is certainly not something which could be observed in any sense-object. (e) *Laws of Logic*. Mr. Stace's conclusion "that, in the last analysis, nothing exists except minds and their sense-data" (p. 155) appears to be incompatible with the existence of his own arguments. Mr. Stace claims (e.g., p. 150) that his arguments conform to the laws of logic,

yet it can hardly be maintained that the laws of logic are sense-data or minds. According to his own arguments, then, he could only get to know of these laws by means of deductive or inductive inference. But such inference, of course, already presupposes the laws of logic. According to Mr. Stace, again, "inductive reasoning proceeds always upon the basis that what has been found in certain observed cases to be true will also be true in unobserved cases" (p. 148). Mr. Stace is here stating a logical principle which contains in itself a reference to "unobserved cases".

Mr. Stace (p. 147) declines to discuss the question whether "sense-objects" are mental, although he says that he is ready to admit that they are not. We do not think that he is entitled to dismiss the question so easily. (a) He uses (p. 152) an inductive argument to show that no sense-objects exist without being the objects of acts of awareness. He there suggests that since every green patch we know of occurs along with an awareness of green, it is likely that *all* green patches occur only along with an awareness of them. It is equally open, however, to someone who is convinced that sense-data are not mental to argue that, since sense-data are *distinct from* acts of awareness, and are not *produced by* them, it is likely that they continue to exist when awareness of them ceases. That is, the sense in which sense-data are not mental may be relevant to an argument to establish their *continuance*. (b) It is also worth noticing that Mr. Stace has not shown that there is a *de facto* concomitance between sense-data and acts of awareness, such as to suggest that the former never exist without the latter. The proposition that you can never be aware of sense-data you are not aware of is tautologous. But a tautology cannot be the basis of an inductive generalisation, as Mr. Stace requires it to be (p. 152). His argument here is in effect that since all known objects are accompanied by acts of awareness of them (for the argument, of course, would apply to all objects, not only to sense-data) then it is likely that all objects are accompanied by acts of awareness of them. But this cannot be an induction. An induction would have to be of the form: A and B have co-existed in all observed cases, perhaps therefore they always do co-exist. In Mr. Stace's argument, however, A would have to stand for "known objects" and B for "acts of awareness of them": but "known objects" already contains in itself the notion of "accompanied by acts of awareness". Further, it is obvious that Mr. Stace cannot argue that, since all known objects are accompanied by acts of awareness, perhaps all objects are; because this would assume that there were objects that are not known, and so be contradictory. Thus he gives no good reason for his contention that it is more likely that sense-data (or any other objects) and acts of awareness of them always occur together, than that sense-data or other objects may occur without acts of awareness of them. We do not wish to argue that sense-data do occur unsensed, but Mr. Stace's argument against their continuance is equally applicable to the continuance of other objects. (c) Even if, therefore, it be admitted

that Mr. Stace has shown that realism (as defined by him) is no more likely than that there is a unicorn on Mars, similarly he would have to admit that the proposition that sense-data never occur without acts of awareness of them is *also* no more likely than that there is a unicorn on Mars.

We must now attempt to show some important differences between belief in the existence of unexperienced entities and belief in the Martian unicorn. According to Mr. Stace the one belief is just as unreasonable as the other. (a) Whereas no reasonable person believes in the existence of a unicorn on Mars, every reasonable person (except a few philosophers while in their "fictitious" studies) believes many propositions which entail the existence of unperceived entities. And if, therefore, these two beliefs are of precisely the same logical status, so much the worse for the logic. All those who put things in boxes to keep them safe, who write on pieces of paper and send these in opaque envelopes to editors of philosophical journals, who believe that fires sometimes go out when neglected, and sometimes stay in when attended to, have held views entailing the proposition "some unperceived entities sometimes exist", *i.e.*, which entail what Mr. Stace calls realism. Mr. Stace may reply that a proposition is not proved true by being universally believed, but it at least lends it a presumptive probability over a proposition nobody believes; and in such a case the onus is obviously on the negative. (b) The belief that some entities sometimes exist unperceived differs from the belief in the Martian unicorn further in that whereas the latter is ignored by, the former is a minimum condition for the possibility of science. As we have observed, induction presupposes the existence of unobserved entities (not necessarily physical) and by its success in prediction justifies belief in many propositions as probable to a very high degree. So far as we can discover, Mr. Stace's argument excludes any ground for justified belief short of "proof". But the scope of demonstrative proof is very narrow indeed, and both in life and in science a greater or less degree of probability is recognised as justifying belief. The status, however, of the proposition under debate is not just that of the probable *conclusions* of science; such probability as it enjoys (in relation to science) attaches to it as a presupposition underlying science. Like the principle of contradiction it is reasonably believed in, not necessarily because it is susceptible of proof, but because it is presupposed in the process of (inductive) proof. (c) The beliefs differ also in that whereas there is nothing in the knowledge we have of Mars to suggest the existence there of a unicorn, there is in the perceptual situation overwhelming evidence (in the sense of considerations which make it reasonable to believe in) the existence of unperceived entities. Most realists believe that the objects of immediate awareness are sense-data, and we need not argue this since Mr. Stace (with some vacillation) agrees. Now it seems to us simply indubitable that an analysis of knowledge will show that sense-data are so arranged in the per-

ceptual field as to suggest that unsensed entities (*e.g.*, the backs of houses, the insides of pillar boxes and paper folded up inside envelopes) exist. The precise nature of the transition from awareness of sense-data to perception of physical objects need not be gone into here, but that the transition is made, and that it carries with it a degree of probability fully justifying belief does not appear to be reasonably dubitable. Here again no "proof" is forthcoming, if by proof is meant text-book demonstration: but again to expect such a proof in this situation seems to us mistaken. Perhaps other readers of MIND may note further differences between the two beliefs in question, but those we have mentioned seem to us sufficient to dispose of Mr. Stace's logical identification of them.

No doubt Mr. Stace has elsewhere argued to his satisfaction the points we have here raised; but since the article purports to be an independent and sufficient refutation of realism we feel sure that Mr. Stace would have us treat it as such, and not as prolegomena to his book. And judging it as such we conclude that Mr. Stace's eristic exercise on the unspecified term "perception" is not a substitute for a critical analysis of the perceptual situation, and, therefore, that his "refutation" leaves the issue between the various types of realism and epistemological idealism where it was.

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H. B. ACTON.

A REPLY TO MR. STACE'S "REFUTATION OF REALISM".

My purpose is to show that the existence of unexperienced entities is knowable on grounds recognised by Mr. Stace himself, in his *Refutation of Realism*.¹

Mr. Stace asserts that there are only two ways in which the existence of anything can be established, namely, by sense-perception and by inference from sense-perception (p. 147). As an example of knowledge of existence by inference from sense-perception, Mr. Stace mentions the unexperienced side of the moon, the existence of which may be *reasonably* inferred from the experienced part (p. 147). That is, Mr. Stace says that justifiable inferences from "things actually experienced" (p. 147) to things *not* actually experienced may *sometimes* be made. The upshot of this is that there may be (cognitive, inferential) experience of (perceptually) unexperienced things.

Now, in order to refute realism, Mr. Stace must show that though there may be, as he admits, knowledge of the existence of never-perceived parts of *continuants in space* (the spatially continuous or solid moon is such a continuant), yet there can be no knowledge of never-perceived durations of *continuants in time*. In other words, he must show that though it is reasonable to believe in the existence of unperceived parts or phases of the object in one dimension (the spatial), yet it is not reasonable to believe in the existence of unperceived parts or phases of the object in another dimension (the temporal). Mr. Stace has not shown this to be the case.

Contrary to his opinion, my opinion is that inferences from sense-perception are sufficient to establish the existence of entities while unexperienced by finite minds. And such inferences are sufficient for this task in the same general way that they are adequate in the case of spatially continuous but unexperienced existents. Just as, by direct observation of one surface of the moon, the astronomer justifiably infers the existence of the unperceived surface, so, again by direct observation, he detects in the moon another property, namely, that of being a temporal continuant, which gives him a *reason* to infer that the moon does not spring in and out of existence synchronically with the experience of it. However, I shall take up this point again below.

Mr. Stace, at this juncture, would have our astronomer perform a very queer feat, in order to establish this natural belief of his. He demands that the astronomer perceive an unperceived duration of the moon, to prove that the moon exists while not being perceived. Only on this basis, says Mr. Stace (p. 148), can the astronomer engage in a genuine inference from sense-perception. But the annoyed physical realist need retort only this: then it is up to Mr. Stace to perceive an unperceived portion of the moon to have *any* reason for belief in its existence. Inference from sense-perception is after

¹ MIND, April, 1934, pp. 145-155.

all certainly *not* an inference from the perception of unperceived characteristics of the object, but rather from perceived characteristics, and this by definition. On perceiving the moon, the characteristic of being a continuant in time (among other characteristics, such as being experienced, being extended, etc.) is discovered. Now we know, by immediate or deductive inference, that of course the moon's relational property of being experienced is annihilated when experience of the moon ceases. But my point is that if the inference from actually perceived spatial characteristics of the moon to the existence of an unperceived spatial "spread" is reasonable, then a similar inference from actually perceived temporal characteristics to the existence of an unperceived temporal "spread" is also reasonable. Since Mr. Stace asserts the antecedent of this implicative proposition, he should be willing to assert its consequent. Now *all* such inferences may in the end turn out to be utterly irrational, but Mr. Stace at least is convinced that they are fairly rational in the case of the unperceived spatial phase of the moon. I submit that, on a similar if not identical basis, they are rational in the case of the unexperienced temporal phase.

Mr. Stace may have up his sleeve the reply that, after all, it is in some sense *possible* to perceive the as yet unperceived face of the moon, but in no sense is it possible to perceive the moon while it is existing unperceived. This assertion is strictly true. But it simply gives aggravated form to the question: what precisely is an inference from sense-perception? Evidently Mr. Stace believes that any such inference must be an inductive extension of knowledge from observed particulars of a kind to unobserved particulars of that kind, for he refers to no other type (p. 148). But perhaps his list of alternatives is not exhaustive. There may be non-inductive inferences from sense-perception. As an example, consider again our lunar case. It is found true on observation that the moon is a temporal continuant *in a special sense*. That is, the moon is observed not only to endure as any imaginary unicorn would during the period of observation, but also to manifest a substantiality—one can point at it with an index finger as one cannot at the imagined unicorn—which contains a promise of existence during interperceptual intervals. In short, without the inductive process of generalisation from some members of a class to all members, the moon is observed to have characteristics which distinguish it from the imaginary unicorn and which reveal it as a temporal continuant in this peculiar sense. On the basis of these actually observed characteristics, one infers existential continuity despite experiential discontinuity. I can make the unicorn stamp impatiently or change colour or disappear by merely attending to it in various ways, whereas the moon presents a tremendously more unmalieable front to my attentions. *This is good internal evidence* for the proposition that there is at least something about the moon which exists independent of my fanciful mind, or which survives my experience of it. Thus there is indeed inference from "observed cases" of the moon's

existence to "unobserved cases" of its existence, but in this lunar situation the inference is not inductive in the narrow sense defined by Mr. Stace (p. 148). So his impossible demand that the realist observe unobserved cases of the moon's existence, in order to get the inductive conclusion about its unobserved existence, may be ignored without having, in good Humean fashion, to commit realism to the flames. Mr. Stace must show that the above-mentioned type of inference from sense-perception—and it is the kind he unwittingly had in mind with regard to the far side of the moon—is as groundless and unreasonable as inferring that unicorns exist on Mars. Until he does, if he continues to attack realism, a heavy *onus probandi* rests on his shoulders.

The method I have used is simply the method of analysis by direct inspection of objects, suggested by Mr. Perry in his article *The Ego-Centric Predicament*. It seems to me that Mr. Stace has not done justice to the purport of that article. According to Mr. Perry's own statement, his analysis of the ego-centric predicament proved nothing whatsoever in favour of realism, which makes Mr. Stace's italicised reminder of this unnecessary. And it was precisely because the argument about the ego-centric predicament proves nothing in favour of either realism or epistemological idealism that Mr. Perry suggested the method of inferences based on analytical inspection of objects of experience. Something may be discoverable in the perceived object which legitimatises assertions of its existence in its unperceived phases, as for example its unperceived spatial spread or its unperceived temporal spread.

To repeat, I suspect that if there is any burden of proof, Mr. Stace should shoulder it and demonstrate that judgments about unexperienced *durations* are groundless, though judgments about unexperienced *extensions* are not. One way out of the difficulty for Mr. Stace would be to admit that, on the basis of his belief that only minds and their sense-data really exist (p. 155), he should not have cited the case of inferring the existence of the unexperienced side of the moon as a "reasonable" one. "Solid" things are after all mere "fictions" concocted by minds to round out the otherwise phantasmagorical objects of their experience, even as the fictions of unperceived temporal continuants are "projected into the void of interperceptual intervals" (p. 155), to establish continuity and thus to "simplify" our view of the world. If however Mr. Stace is willing to solve the difficulty in this manner, he is in effect giving up one of the means of demonstrating existence, namely, the method of inference from sense-perception. This must be totally discarded as irrational. That leaves him only direct sense-perception, untainted by inference. And sense-perception untainted by inference is bare sensory awareness, unilluminated by interpretation. That, perhaps even Mr. Stace would agree, would make of him a "solipsist of the present moment," and would render *any reasonable theory* of existence a patent impossibility.

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MR. STACE'S "REFUTATION OF REALISM".

MR. W. T. STACE's challenge in "The Refutation of Realism," *MIND*, April, 1934, pp. 145-155, is the climax of a campaign provocative in itself and representative of a wide and unmistakable phenomenalist reaction against the quondam "new" realisms. Mr. Stace aims at bigger game, but it happens that I have been recently recapitulating the realistic argument, and I beg leave to indicate shortly how the realist may learn from and reply to Mr. Stace's "refutation."

I wonder if Mr. Stace realizes how thoroughly he has changed his own argument. In *The Theory of Knowledge and Existence* and in his reply to Mr. Price (*MIND*, October, 1933, pp. 504-506), he relied on the Berkeleyan principle *a priori* that *esse* cannot be conceived in abstraction from *percipi*, so that the realistic hypothesis cannot be so much as meaningfully framed. This principle seems to me false, for reasons some of which I have suggested in "The *A Priori* Argument for Subjectivism," *The Monist*, July, 1933, esp. pages 190-197. But meantime Mr. Stace has himself abandoned it, for in "The Refutation of Realism" he accepts realism as a meaningful hypothesis, and his new argument is quite different. It consists in the following: (1) "An external world exists" is antecedently uneconomical and improbable—like "There is a unicorn on Mars." (2) The truth of "An external world exists" cannot be inductively inferred from experience because "induction is generalization from observed facts, but there is not a single case of an unexperienced existence having been observed" (p. 148). (3) Its truth cannot be deductively inferred from experience. (4) Its truth is not even presumptively established by Mr. Perry's repudiation of the "egocentric" argument, Mr. Moore's distinction between *sensum* and *sensing*, or Mr. Lovejoy's reliance on the causal principle. (5) Its defence as an "instinctive belief" is logically and psychologically nonsense.

Now, I think that all serious-minded realists must reject, as Mr. Stace does, any attempt to establish realism either (3) demonstratively or (5) intuitively. Let us confess, furthermore, that (4) Mr. Perry's and Mr. Moore's arguments simply indicate, as against certain subjectivistic criticisms, how realism *may* be true, and Mr. Lovejoy's how realism has whatever force the principle of causal continuity has. The crux of the refutation lies therefore in (1) the supposed antecedent extravagance of realism, and (2) its supposed incapacity for empirical evidence. Now, (1) I do not think that realism is

antecedently more extravagant than its contradictory, or that our disbelief in Martian unicorns rests solely on our *lack* of evidence for them. (See "The Inductive Argument for Subjectivism," *The Monist*, January, 1934, esp. pp. 89-102.) But we need not exercise this question, because its whole significance admittedly depends on Mr. Stace's conviction (2) that there can be no positive inductive evidence for realism, while this conviction, in turn, is referred exclusively to the doctrine that *induction is always simple generalization*. The last doctrine, then, is the very fount and origin of the "refutation of realism"; and it is, I believe, fallacious. In spite of a considerable tradition, it is not properly representative either of actual scientific procedure or of modern logical theory. Induction is, in essence, the framing of beliefs which comport with and explain the data of experience, and which are genuinely probable in proportion as they accomplish this end. Generalization is only a special case of the inductive procedure, rather more dubious than some others.

The case for realism depends, therefore, first on a general certification of the method of inductive hypothesis, and second on the adequacy of the evidence for the specific hypothesis of realism. I think that both of these are to be decided favourably ("The Argument for Realism," *The Monist*, July, 1934), but at present I would simply point out that Mr. Stace has himself almost inadvertently approved them already. For in the first place he has repeatedly accepted a process of inductive inference *to other minds* which is essentially the process of abstraction and constructive hypothesis. (His doctrine of simple generalization, strictly taken, could never transcend solipsism.) And in the second place, he has repeatedly described a process of what he calls "construction of the physical world" which is, item for item, logically indistinguishable from the process of constructive hypothesis or from his method of inference to other minds. This "construction" he has differentiated from valid inductive inference solely on the grounds (a) that *esse* is a *priori* inconceivable apart from *percipi*, and (b) that induction is simple generalization. If, as appears, Mr. Stace has had to abandon both of these principles, he seems less likely to refute realism than to become its last and most welcome convert.

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VII.—CRITICAL NOTICES.

Idealistic Logic : A Study of its Aim, Method and Achievement. By
C. R. MORRIS, M.A. London : Macmillan & Co. Ltd., 1933.
Pp. vii, 338. 12s. 6d.

IN the first chapter of this book, Mr. Morris asks what is the aim of logic, and what its method. He mentions the view that its aim is to enable us to distinguish between sound and spurious proof. And he connects this (p. 4) with the view that 'all proof could be reduced to one or other of the known forms, and was therefore bound to conform to the rules which governed that form'. But he does not perhaps sufficiently distinguish the objection to this view, that men of science can judge for themselves whether they are arguing soundly, and do not need a logician to tell them, from the objection that their methods of demonstration are not of the forms which the 'old logic' alleged that demonstration must take. The first objection would not show that the old logic had misrepresented the nature of thinking, but only that a wrong reason had been given for enquiring into the nature of it; the second, if substantiated, would show that it had misrepresented that nature.

The old claim of logic, Mr. Morris thinks, was to be a pure enquiry, legislating for and limiting *a priori* the possibility of all thinking. The growth first, in the seventeenth and eighteenth centuries, of modern physics, and since then of biology and a physics yet more modern, has destroyed this claim, by revealing methods of enquiry and of argument which advance knowledge, but of which the old logic had taken no account, and indeed could take no account, because it was purely formal, whereas many of the arguments in question can only be judged by those familiar with the particular subject-matter (pp. 5-8). But the newer Idealistic logic is 'prepared to wait upon the development of fresh scientific modes of thought, which must inevitably bring with them fresh revolutions in logical theory, just as the development of physics in the seventeenth century had now brought in its train the Copernican Revolution of Kant' (p. 9).

For, according to Mr. Morris, it was for logic that Kant proposed a new procedure, taking his hint from the progress which a new procedure in physics had brought to that science.¹ 'On the examination of this new method Kant founded the new logic.' But Kant himself said that he was revolutionising 'the procedure which has

¹ *Kr.d.r.V.* B. xii., *E.T.* (N. K. Smith), p. 20 : cited by Morris, p. 9.

hitherto prevailed in *metaphysics* . . . in accordance with the example set *by the geometers and physicists*. It was metaphysics, not logic, which was to be 'set upon the secure path of a science', and this so as to 'acquire exhaustive knowledge of its own field': an 'advantage such as falls to the lot of no other science which deals with objects (for *logic* is concerned only with the form of thought in general)'.¹ It is true that the delimitation of logic from metaphysics is not easy, and that Kant gave the name *Transcendental Logic* to the whole portion of the *Kritik* between the *Transcendental Aesthetic* and the *Transcendental Doctrine of Method*. But was he there trying to offer an account of the procedure of scientific thought that should replace, as more correct, the faulty account offered by the old logic, and might *need correction itself* as science proceeded to attack fresh problems, or make fresh attacks upon its old problems? Was he doing what we are told at p. 17 that logic does, 'examining statements and inferences in regard to their form'? This seems to be Mr. Morris's view. He opposes the Idealistic to the old logic as rival treatments of the same problem, and finds the beginnings of the Idealistic logic in Kant's *Kritik*. Yet Bradley, whom he treats as a principal expounder of the Idealistic logic, would surely not have allowed that in his *Principles of Logic* he was continuing investigations begun in the *Transcendental Logic* of Kant. And it may turn out, as we proceed to consider Mr. Morris's book, that much turns on the question whether he is correct in tracing to the *Kritik* the opposition of the Idealistic to the 'old' logic.²

He adds, that in founding the new logic upon an examination of the new method of physics, Kant 'was in fact condemning it to be in an important sense an empirical science' (p. 9). But would logic be itself an empirical science because it waited upon the empirical sciences to lay bare, by reflecting on the thinking displayed in them, the general nature of thinking, and to consider how far those sciences could claim to give us knowledge of nature, as well as to argue consistently with their assumptions? Aristotle's theory of syllogism was reached by reflecting on dialectical discussion, and his theory of demonstration by reflecting also—however faultily—on such geometrical and other scientific reasonings as were available to him. If they were not empirical, why should a logic any more be so which proceeds by reflection on newer sciences?

'Logic', we are told (p. 14), 'differentiates itself from any merely empirical enquiry as to what a particular scientist, or a particular class of scientists, or scientists generally taken as a class, seem as a matter of fact to be taking for granted. . . . It claims rather to tell' the scientist this. But it cannot tell him without first making the enquiry; and in what sense is this empirical? To discover the presuppositions of a given scientific enquiry, we do not proceed empirically. 'A methodical empirical enquiry into the conditions

¹ *Kr.d.r.V.* B. xxii.-xxiv., *E.T.* pp. 25-26: italics, except to '*logic*', mine

² *Cf. infra*, pp. 373-4.

under which certain arguments seem in actual fact to carry conviction with scientists' (p. 15) is indeed possible; it might appear that certain religious or anti-religious beliefs, or the Aryan descents of those who had first put forward the arguments, were in fact connected with certain scientists' acceptance of such and such arguments. But this is to investigate the non-rational causes of beliefs, not what scientists seem to be taking for granted in their arguments. It is hard to see why, because the new logic teaches differently from the old about the nature of thinking, it is any more empirical.

The second chapter proposes to discuss the method of logic. We are told, in words already quoted, that 'logic proceeds by examining statements and inferences in regard to their form' (p. 17). But the task of logic is apparently 'to throw light on the nature and limits of proof, and thereby of knowledge strictly so-called' (p. 25); the last words imply that nothing can be known which cannot be proved. Mr. Morris argues that we can only throw this light by examining the meaning of statements. He is thus led into a discussion of the interesting question whether the meaning of a statement, so far as dependent on its form, is conventional. He holds that 'the true meaning of statements is evidently not fixed by what men understand by them, but by something else' (p. 23). Statements have implications which those who make them need not realize; 'not every one who uses a statement means by it what the statement itself means' (p. 27). It is allowed that this view seems to suggest that proof depends 'upon a proving which is not the activity of any particular mind', but of the Absolute (p. 26); but there may be a middle position between this and the scepticism that would follow, if no statement had any meaning but what the man who makes it gives it at the moment. What that middle position is, is nowhere made clear. But we are told that if we grant that statements have a meaning of their own, and wish to discover these, our best technique is to classify statements according to their forms and, assuming that we know the meaning of some one form, to investigate those of others by comparison. This method logic has adopted. But it felt that mere grammatical and stylistic differences of form were not what was relevant; and many of these were eliminated, by reducing statements to selected grammatical forms. In particular, the old logic 'first converted them all into the form *S* is *P*' (p. 28). Why was this, and why should we think that such conversion produces the required result? These are questions to which the attention of logicians was never directed till Kant wrote his first *Kritik*, and they cannot be answered without considering the essential differences between the traditional and the Kantian logics.

The discussion how far the meaning of statements is conventional contains many interesting points. Clearly (though this is not pointed out) men could not construct wholly new forms, with new conventions as to their meanings, without using the old, in confidence that they understood these, for the purpose; as is illustrated by the fact that

a logistical symbolism must be explained at the outset in words. Yet to mean must surely belong to forms of statement only because by their help thinking beings express to others, and perhaps bring into being for themselves, *their* meaning. The connection in a figure between its being contained by three straight lines and its angles making 180° may, it would seem, be grasped by one who envisages the necessary construction without his putting the proof into words even silently; the sensible or imagined figure may be enough. But the proof cannot be communicated or examined until put into words. And we may agree that, when it is put into words, there are features in our form of statement somehow corresponding to and expressing our recognition, or assumption, of certain general features in that which our statement declares to be or in the system to which that belongs; and that nevertheless these features are not in our statement themselves declared to be. And it is these features which logical reflection on the meaning of forms of statement seeks to elicit.

What then is expressed by the form S is P , and what was involved in holding, with the traditional logic, that it is the proper form for any statement? Mr. Morris says (chap. iii., p. 34) that a theory of knowledge was involved, the theory 'that all acts of knowing are of one essential type, *viz.*, the recognizing of the universal in the particular'. He connects this theory (p. 37) with the Socratic search for definitions, and the belief 'that there could be no knowledge and no straight thinking unless terms were defined'; if, and only if, this is done can we reach new knowledge by argument (pp. 37-40).

Now, it might be objected that between holding that in all knowing we recognize the universal in the particular, holding that the proper form of every statement is S is P , and holding that the acquisition of new knowledge by argument must start from definitions, the connection is less close than Mr. Morris thinks. For if I say that the volume of a cylinder is thrice that of a cone of the same base and height, my statement is of the form aRb ; but I am recognizing not only in particular figures the characters cylindricity and conehood, but in their relation the ratio 1 : 3. Again, a definition is not the recognition of the universal in the particular. But it is yet more surprising that Mr. Morris connects with the insistence on definition, and ascribes to the Aristotelian logic, the view that 'granted definition of terms, there can then be immediate apprehension of the truth or falsehood of particular statements' (p. 42; *cf.* p. 57). That in the last resort the truth of a defining statement must be immediately apprehended Aristotle says; but has it ever been said that the power to define an attribute or a species is itself sufficient for one to know that the attribute really belongs to a particular subject, or the subject is really of the species? And such a view is in no way bound up with holding that all statement is of the form S is P .¹

¹ In fact, it was only categorical statements that were to be reduced to this form, except in a very corrupt tradition.

Mr. Morris finds the reason for the prevalence of this last doctrine in a false theory of inference.¹ 'The old logic maintained that all inference, properly so-called, was deductive; that is, that it consisted of deducing conclusions from statements already established as true' (p. 46). Here he seems to fail to distinguish between inference and demonstration. It is true, as he says, that Plato (not to mention Aristotle) held that unless your ἀρχὴ was known, the conclusions inferred from it would not be known (though Plato was not guilty of the fallacy imputed to him on p. 47, of arguing that if you know a conclusion to be true, you know an ἀρχὴ to be true from which it could be inferred). But he showed in holding this that he thought there might be *inference* from premises not known to be true. Mr. Morris, however, though he does not identify syllogism with deduction, interprets the theory that all inference is syllogistic in the same strange way as he does the theory that it is deductive. 'It maintains that the reduction of an argument to the syllogistic form, involving as it does the reduction of the statements concerned to the form *S is P*, will always satisfy the mind that an argument is valid, if it is valid—or more strictly, according to the traditional logic, that the conclusion is true' (p. 52).

There are really two charges brought by Mr. Morris against the old logic. One is that it held that the acquisition of knowledge by inference requires premises known to be true; this is what he understands by the doctrine that all reasoning is deductive. The other is that it first reduced inference to a quasi-mechanical operation with premises (an operation, the validity of which it held to be guaranteed by the *Dictum de Omni et Nullo*, itself here called a principle without any indication that it was not held to be so in the same sense as the ἀρχὴ of a syllogism); that it then reduced the task of determining the truth of the premises to that of defining their predicates—'if we can define our predicate, says the logic, if we know precisely what it means, then we cannot apply it to the wrong subject' (p. 57; cf. p. 121); but that it did not then give any account (though there are suggestions of one in the theory of ἀνάμνησις) of how we reach the definitions of our concepts. The new logic puts judgments, not concepts, first, and holds that so far as we get new knowledge by thinking, it is through systematizing our judgments, not through inference from ἀρχαὶ known to be true.

In chap. iv. the downfall of the traditional logic is recounted. Descartes indeed still 'subscribed in essentials to the traditional doctrine that inference is deductive, when there was much in his own philosophy which should have made him question it' (p. 68); for 'having insisted on the intuitive nature of every step taken in a demonstration, it is not clear why he thought that such demonstration must start from independently apprehended axioms, *i.e.*, why

¹ On p. 87, however, he connects holding that '*S is P*' is the proper form for statements with the theory that reality must consist of independent substances.

he regards such demonstration as in any sense deductive, properly speaking, at all' (p. 70). And the essential position of the British Empiricists, that all knowledge is derived from sense-perception, and that the knowledge given by particular sense-perceptions is therefore not derived by deduction from any general principles, should at once have led to the complete rejection of the old logic (p. 70). (Yet surely that logic only maintained that new knowledge which comes *by thinking* ἐκ προὔπαρχούσης γίνεται γνώσεως). However, that rejection was not made. On the contrary, Locke taught that we can have a non-sensuous intuition of agreement and disagreement of ideas, which would furnish principles for deduction. But 'the most general statements from which all knowledge is deduced, and on whose independent credit all knowledge depends, can only deal with ideas than which nothing can be simpler' (p. 73)—(a view of deduction hardly reconcilable with one which includes definitions among ἀρχαί); and Mr. Morris holds that because the old logic taught that, if knowledge is to be possible, thought needs such simple ideas to start from, therefore Locke jumped to the conclusion that simple ideas are given in sense-perception: a contention that seems to imply that Mr. Morris thinks, or thinks that Locke thought, that according to the old logic propositions about particular sensibles can be principles in deductive reasoning.

However, it became apparent that empiricism would not square with allowing that we have knowledge of scientific propositions, if such knowledge can only be acquired as the old logic says. In particular, Hume pointed out that the causal principle is basic to the reasonings of science; that it should therefore (according to the old logic) be knowable before and independently of its use; but that it is not knowable. Therefore he said that so-called thinking was but association of ideas; he abandoned logic and knowledge, supposing no theory of true judgment and valid inference to be possible. But again that was because he assumed throughout 'that any valid thinking must start from absolutely true first premises, which must be recognized as true at the beginning' (p. 76). What was necessary was to abandon the assumption that, if we are to get new knowledge by thinking, we must use *deductio*, and must start from premises known to be true; since such starting-points cannot be established. What the Idealistic logic, beginning with Kant, has done is to maintain 'an account of inference which dispenses with the necessity of such fixed starting points' (p. 84); though Kant did not see all the implications of his own teaching, and wished to retain the old logic along with his own. Yet, if thought is really synthetic, the old logic must be completely remodelled.

Mr. Morris thinks that Kant accepted it from Hume, that the laws found to govern sequences of ideas in imagining 'govern all sequences in the mind whatever' (p. 88). And he seems to identify the establishment of this thesis about the sequence of ideas with that of the thesis that all thinking is synthetic (pp. 92-94). At

any rate, it is 'an important resemblance between inference, as we find it in the sciences, and imagining, *viz.* that both are synthetic; that is, both involve the presence of non-intuited connexions between ideas which have themselves been derived from intuition' (pp. 95-96). This statement seems to identify (in Hume's language) a natural with a philosophical relation; but what Mr. Morris is trying to prove is merely that when, *e.g.*, we judge that quinine cures fever, it is not because we intuit a connexion between taking quinine and losing the disease. 'This putting together'—really, this judgment that the events are thus connected—is not controlled by intuition or analysis' (p. 97); it is a real synthesis, controlled by 'a spontaneous activity of the mind, essential to any knowledge which can properly be given that name' (p. 98). Having once seen that knowledge is thus synthetic in respect of causal relations, Kant 'goes on to notice that the same is true in geometry, arithmetic and mechanics' (*ibid.*). But is the same true? Did not Kant hold that in geometry and arithmetic the synthesis is one from which it results that we *can* intuit connexions? This may suggest a different view from Mr. Morris's of the way in which Kant held 'functions of synthesis' to work.¹

According to the old logic, 'to think is not to connect, but to apprehend or intuit a connexion'; 'judgment and inference considered as apprehensions are not activities at all'. According to Kant, 'The mind in addition to perceiving or intuiting has to *do* something with its perceptions' (p. 100).² But, if so, 'how can the results of its activity have any claim to be called knowledge?' (*ibid.*). To justify so calling them we must abandon the view that inference is deductive. Again, Descartes supposed that, whereas ordinarily 'the sequence of ideas is influenced by passions and by sensuous stimuli', we can put ourselves into a state in which 'the laws of pure thought exhibited by logic' alone influence it. Hume showed that 'ideas never follow one another purely in accordance with "the so-called laws of thought"', but always according to those of association' (pp. 106-109). Logic cannot, if it analyses sequences of ideas, find any of them conforming to the laws of logic. But it can analyse *forms* of experience, and show (is this what is meant?) that judgment and inference are acts of synthesis giving to experience these forms.

Anyhow, Mr. Morris thinks that, according to Kant, to judge is to *make* a unity (p. 119). This Kant first realized in considering physics; the structure of physics is something which the mind makes by its spontaneous activity of judging. To know is not a passivity; it is to judge, and to judge is to *do* something (pp. 122-23). Kant should,

¹ Cf. *infra*, pp. 373-4.

² This is its synthetic activity; yet on p. 114 the view that 'in mathematics every judgment requires a fresh *intuition*' is said to treat judgment as synthetic.

when he realized this, have corrected the teaching of the *Transcendental Aesthetic*, according to which the judgments of mathematics are intuitive, merely apprehending a unity, and 'our knowledge of geometry is a systematic unity because space is a unity. . . . This view is old-fashioned, because it represents the unity in geometrical knowledge as due, not to the nature of the mind, but to the nature of the object, *i.e.*, space—which is not given its characteristic unity by our judgments, but has it independently, and is intuited by us to have it' (pp. 128-129). But the physical world, Kant saw, is not intuited as a unity; yet 'the statements of physics at any moment of its history form a systematic unity; the lesson of modern physics is that all its statements must go to make up a systematic unity; and that is the business of judgment—not to see that its statements are true, but to see that they are systematic' (pp. 130-131). The mind in judging achieves this systematic unity by following general rules, such as that in all change something remains quantitatively the same, or as the law of causality, or as the law of action and equal and opposite reaction (p. 134). (But surely the mind is here assuming that *nature* obeys these rules; and is not Mr. Morris's argument like Hume's, where he treats the acceptance of some causal law upon the evidence, under suitable conditions, of one or a few facts, as a case of the mind being influenced by general rules, and not of our thinking that events exemplify them? *Treatise on the Understanding*, III, § xv.) When the scientist fits his phenomena into a system, it is doubtful whether 'there is any intuition or direct apprehension of any kind to control his system-building: he simply goes on worrying at them until they do all fit into a system—any system' (p. 141). And Kant sought to show that all thinking is equally system-making, never intuition; though Mr. Morris is not satisfied that he made this out. We must take it as a tentative hypothesis that all thinking is of this synthetic, system-making nature; and that is what the Idealistic logic does, and tries to work it out.

For in this logic (chap. viii.) the fundamental act of the mind is to judge; and to judge is not to know; judgment produces statements which may be true or false. Yet it may be disciplined, and logic investigates the discipline it needs. Intuition can have no discipline, and gives logic nothing to investigate. The characteristic mark of a judgment is to be essentially bound to other judgments; thinking in being systematic is achieving system: not reproducing an intuited unity, but producing a unity of its own. The mind must therefore have some freedom to modify the parts of the system; it cannot have to take them as given. The terms of the judgment cannot 'represent realities apprehended' (p. 151). Our concepts are modified by our judgments; we do not start from concepts once for all defined.

Inference, again (chap. ix.), is, according to the Idealistic logic, an activity; whereas the old logic admitted indeed a preliminary

activity, but held the inference itself to be an immediate apprehension. The new regards it not as an apprehension of truth, but as 'the working out according to rules of the implications of judgments which may be true or may be false' (p. 163). (But if this activity modifies the terms, are there any rules by which the mind controls that modification?) 'According to rules', because, if there is to be universality and necessity in thinking, there must be rules which the mind follows in all thinking as such. Nevertheless, the most fundamental categories of scientific thinking seem changeable; but the Idealistic logic, though giving up necessary and universal *truths*, seeks to defend such *principles of thought*. (The distinction is not illustrated.) This is not to allege that my thinking certain things necessitates my thinking another thing, nor yet that in inference I understand certain facts to necessitate another fact (p. 170). The necessity is that found in hypothetical thinking; certain propositions cohere. But this coherence of propositions in a system, which the Idealistic logic holds to be possible and sometimes actual, is not guaranteed by anything merely formal, as the syllogism in the old logic was formally valid in virtue of the law of identity. Hereto the new logic must reconcile itself, and need not be so much discouraged by having to do so as Bradley was (p. 174).

But, even if such absolute coherence in thinking be possible, would it lead to knowledge of Reality? It is not the business of logic to show that it does (p. 177), but to show how the mind proceeds in thinking. It might be suggested that the coherent theory reached by thinking is accepted or rejected as a whole on the strength of some immediate apprehension. But the Idealistic logic will have nothing to do with immediate apprehension; out of rejecting this its whole theory of judgment arose. And how do we know, this logic will ask, that a unitary theory is either true as a whole, or false as a whole, and not partly true and partly false? Inference, it admits, never gives knowledge of Reality, and is never formally perfect. The Idealistic logic divorces validity from truth.

There is, however, a Coherence theory of truth (chap. x.) which, while agreeing with the Idealistic logic that systematic unity is the essential feature of thinking, that 'in thinking we construct a whole, and every part has its nature determined by the whole: there are no propositions which represent immediate apprehension, there are no "facts" which are immediately known' (p. 183), adds that what is fully coherent is *true*. Can we accept this theory?

We must not confuse it with the pre-Kantian notion that, if we could fit all facts into a whole, we should understand the universe as God had made it. Kant showed that 'it is essential to the very nature of a fact that it should fit into a system.'¹ Thus the fact that

¹ But not in the sense that we could not recognize a fact until we knew (or at least had formed judgments specifying) the whole system of nature into which it fits; and that is the sense which Mr. Morris's argument requires.

facts fit into a system is of no avail to prove that the system represents the truth' (p. 189). The Coherence theory admits this, and 'still maintains that there is only one really coherent system, namely the truth' (p. 190).

Yet men of science constantly abandon one coherent system for another; and they think they do this because the system abandoned does not fit in with some 'observed facts'. Has the Coherence theory then gone too far in denying all immediacy? Its objection to admitting any is that 'if the given are themselves, as given, parts of a system, then what appears to be the making of a system by thought must really be nothing more than the apprehension of relations between the given parts; that is to say, the relations between the parts are as much given as the "brute facts" which are the parts' (p. 197). This passage shows decisively that Mr. Morris, when he says that thought is system-making, means that it makes its object systematic, not that systematic thinking discovers system in the object. 'If there can be "brute facts", then thought cannot be a system-producing activity; if thought is a system-producing activity, there cannot be "brute facts"' (p. 198).

The Coherence theory attempts to show that 'in the course of reasoning all statements of fact come to be *modified*' (*ibid.*). For the fundamental principles of the empirical sciences such modification is easily verified. Mr. Morris argues in chap. xi. that even of particular facts there are no 'incorrigible' statements, such as 'It is blue' or 'I have a tooth-ache'. No record of observation is *absolutely* reliable, nor therefore can be taken as absolutely true. He points out, rightly enough, that the question is not of apprehensions which cannot be stated, but of 'statements of apprehension'. 'In all statement some process . . . has gone on over and above the actual apprehending of something in the object'; and this is why we say the statement involves an act of 'judgment' (pp. 200, 211). The statement is therefore corrigible, and so far the Coherence theory is justified in claiming that there are no brute facts.

This argument is interestingly developed. But if it is to be of use, it must be shown that in science we correct our statements of apprehension to make them fit our theories; whereas in fact, though we often correct them, we do not feel justified in adjusting them to what our theories require. They are not *thus* plastic; and this is a point which Mr. Morris does not notice.

But besides statements of fact, there are also mathematical statements which, on the Coherence theory, must also involve judgment, with the 'give and take', the 'cumulative effect on the mind of experience as a unity' in every statement, that Mr. Morris holds the word 'judgment' is intended in Idealistic logic to emphasize (*cf.* pp. 231-233, 297-298). Now the knowledge that 2 and 2 make 4 does not need that of the rest of a mathematical system; and the statement is incorrigible. The Coherence theory, unable to deny the incorrigibility of statements like this, has attempted to save its

position by maintaining that they change their meaning as knowledge advances. Mr. Morris rejects this view, on the ground that it would be fatal to any logic. For thinking can only proceed or be examined in statements and, unless there can be statements with fixed meanings, it can have no discipline in its procedure, nor know what it is examining.

The point is a good one. But might not one go on to question the whole notion of a system-making thought, such as Mr. Morris expounds and is prepared to accept? The making of a systematic world may perhaps be the work of an intelligence; but that work is not the thinking which we consciously conduct and logic studies. How making is possible without a 'given' material, whose 'brute' nature limits the maker's activity, we do not understand. In any case, our conscious thinking is not such creation. Whether the Idealistic logic teaches that it is, need not here be discussed. Such teaching is anyhow primarily metaphysical. It is surely false that any thinking which we can so study in ourselves as to exhibit the forms of statement and inference in it could proceed, if it found everything plastic. It is not enough that we can point to statements which in fact we find incorrigible. It must be insisted that if all were corrigible *ad libitum*, thought could make no system.

Mr. Morris's quarrel, however, with the doctrine he expounds is less profound than this. He thinks there *can* be such thinking as it alleges all our thinking essentially is, but that thinking in mathematics is apparently not such, and also that the logic in question has failed to explain why a coherent scientific theory is sometimes rejected. He now turns, in chaps. xii. and xiii., to examine Cook Wilson's doctrine. These chapters have some title to be called the most interesting in the book, partly because at last we get definite references to statements discussed, and more illustration; hitherto for the most part what has been imputed to 'Idealistic logic' or even to particular philosophers, has been far too little supported by reference or quotation. But also, Mr. Morris sees and puts very clearly where the issue between Cook Wilson's and the Idealistic logic lies. The first starts from apprehensions of the real, and knowledge, and asserts a fundamental difference between knowledge and opinion. The second includes these both under judgment, on the ground that they differ only in degree, and denies that there are any statements of pure apprehension.

Here Mr. Morris is with the Idealists. There are no 'independent, single apprehensions of single facts' (p. 233). In arguing against them, he recurs to Hume's teaching about the psychological laws governing the succession of our thoughts, and discusses Cook Wilson's attempt to discriminate the aspects in an act of thought studied by logic and by psychology respectively. He thinks that, so long as we consider only single apprehensions, we might hold that psychology could investigate the conditions of their occurrence, but logic their character; inference, however, presents more difficulty, because,

even if the act of apprehending that the premised facts necessitate what is concluded be timeless, there is yet a time-order in which the apprehension of facts premised must come. Apprehension, according to Mr. Morris, is not an act of the mind, but a character of certain thoughts and events in the mind, and it cannot determine their time-order. If it is a character of these events, it must be dependent on the same conditions as determine the occurrence of the events; these conditions are psychological, and there can therefore be no room for a logical treatment of apprehension. Further, logic requires *statements* of apprehension; Cook Wilson is inclined to hold that the apprehending includes statement, at least to oneself. But he holds also that there are statements not of apprehension. How do I know which some statement of mine is? Cook Wilson replies that some statements, while I am attending closely to their meaning, I just cannot doubt; Mr. Morris thinks this a weak argument. How do I know that I am attending with the requisite closeness? and if I must first know this, will not the apprehension in question be mediate? But Cook Wilson also argues that some statements are in fact never modified and corrected, and therefore depend on no other knowledge. Mr. Morris admits that he cannot refute this, so far as certain statements in mathematics are concerned, but thinks that on general grounds it is unlikely 'that the mind should acquire its knowledge of mathematics in a manner *absolutely* different from that in which it gains other knowledge' (p. 255, n. 2). When the claim is made for statements of perception, like 'This piece of paper is white', he is prepared to reject it, on the ground that all singular statements are essentially corrigible.

But Cook Wilson further argues that, if no statements of apprehension were knowledge, there could be no knowledge; if there is *ἐπιστήμη*, there must be *ἀρχὴ ἐπιστήμης*. Here Mr. Morris dissents, and his discussion presents difficulties. He seems to think that if we have once given up (as Cook Wilson does) the claim to say *a priori* (i.e., once for all) what kind of argument (e.g., syllogism) must produce knowledge, the validity of an argument cannot be a matter of immediate apprehension (pp. 258-260). But how, if the validity of an argument is questioned, the matter can be settled except by considering it again, he does not suggest. He complains that Cook Wilson's theory 'does not seek to justify inference as a mechanism, as an organism, or as anything whatever'; that it is 'a purely descriptive, to logic utterly unilluminating, account of a certain experience, viz. geometrical argument, representing it as a series of states of a certain kind' (p. 266). What he would have, and how the Idealistic account is more than another descriptive account, representing inference as a system-making activity, is not clear.¹ He is, however, on stronger ground when he points out that to hold,

¹ On p. 334 the Idealistic logic's theories of inference are in fact said to be 'more or less descriptive accounts' of an ultimately mysterious operation. Cf. *infra*, p. 373.

as Cook Wilson does, that the so-called necessary connexion in inference is really apprehension of necessary connexion in the *facts* is difficult, when hypothetical reasoning or *reductio ad absurdum* is in question. But does the Idealistic logic gain by saying that inference *nowise* involves knowledge of reality?

In a concluding chapter (xiv.) Mr. Morris reviews his enquiry, and collects its results. And we may note in the first place that he allows that the Idealistic logic fails to square its account of reasoning with what appears to be the nature of reasoning in mathematics. For whereas in mathematics our statements are absolutely systematic, our thinking is not; *i.e.*, we do not, as it would seem, *make* by it the system which we come to accept. 'There is no clear evidence that in working out what follows from the axioms in geometry, the mind is in any way system-building: there is no clear evidence of the underlying operation of any such thing as a synthetic unity of apperception, as we have represented it' (p. 297).

Several comments suggest themselves on this section of the chapter. First, it is again clear that system-building means producing the connectedness in what, in thinking, we come to know or accept. And in this context we may notice what is said of biology on page 291: 'With the abandonment of mechanism in biology, it has become clear that no recognition of necessary connexions, however hypothetical, are [*sic*] here free from all empirical taint'. Mr. Morris seems to mean that, when we come to frame a mechanical theory, we produce connexions which hold absolutely; when we come to frame a non-mechanical one, we produce, not connexions the precise terms of which our experience has been insufficient to reveal, but incomplete connexions, or what he strangely calls (p. 296) an 'empirically and contingently systematic' unity. Further, the section throws light on what he means by saying that, according to the Idealistic logic, reasoning is essentially hypothetical: 'when a conclusion necessarily follows from a premise there is always a guiding and controlling condition within which that necessity holds, and outside it not' (p. 287). Now let us suppose that if some condition *C* is satisfied, then, given *p*, *q* follows: it is *not* then true that *q* follows *necessarily* from *p*. Further consideration seems to show that Mr. Morris does not distinguish between premises and principles of inference. He says (p. 284) that it is not immediately obvious that there are *universal* or *necessary* principles in medical or historical sciences as there are in physics; and that, if those enquiries be considered as well as physics, we may modify the view of the system-making character of thought to which the consideration of physics alone leads us. Now it is true that in medicine we are less successful than in physics in inductively establishing 'proper principles', *ῥηταί ἀρχαί*, with which our statements of facts can be shown to agree. It is not true that the *κοιναὶ ἀρχαί*, such as the principle of contradiction, or that a 'proper principle' with which accepted statements of facts conflict must be rejected, are regarded

as less necessary or universal, nor that we take a different view of what is meant by saying that, if certain premises are true, a certain conclusion necessarily follows. But it looks as if Mr. Morris, holding that thinking is *making* the systematic connexions which we come to know, holds that in some subjects thought makes a more closely-knitted connectedness than in others. Thirdly, we may ask whether he is right in distinguishing between geometry and physics in respect of 'the underlying operation of any such thing as a synthetic unity of apperception'. On Kant's view at any rate it is as necessary for uniting a manifold with the unity of the apprehending self under the forms of space and time as of substance and causality. That Kant speaks of the synthesis in one case of sense and in the other of understanding does not really alter this. And, in spite of various statements up and down this book about Kant's view of our mathematical knowledge, Kant as definitely traces the possibility of synthetic judgments *a priori* in mathematics to a preceding synthesis on the part of the mind as he does in 'pure science of nature'. But we must recur shortly to the way in which Mr. Morris interprets Kant's teaching about the functions of unity in judgment.

In the next place, Mr. Morris recurs to the problem how, if there are no immediate apprehensions of facts, we can choose between rival systematic theories. On this, what he has to offer is as follows. Judgment is never immediate; but it may have an element of immediacy. It works, no doubt, according to rules, and logic may do something to discover these, so far as it is not immediate; but of the element of immediacy no account can be given. This leaves judgment mysterious; but so was the 'apprehension' of the old logic. How, for example, if we found the definition of justice, did we know that it was the definition of justice? ¹ There may then be an immediate awareness, an element of immediacy in knowledge; this the arguments of the Idealistic logic cannot refute. But this faculty of immediacy cannot by itself contribute *statements* of knowledge. Whether, however, the other factor in judgment is (as Mr. Morris supposes) one of whose operation logic ever has discovered, could discover, or tries to discover the rules is open to doubt.

Next, the question of the relation between logic and psychology is resumed. It is apparently contended that on the one hand all the thinking that occurs in the mind is the proper subject of a psychology that explains it as any other particular science explains the events in its field; on the other hand, thinking and reasoning are 'based on a formal structure whose laws are rigid and universal' (p. 316), and in virtue alone of their conformity to these laws do they contribute to knowledge by a system-building in which no particular judgment is

¹ Mr. Morris very curiously asks how Socrates could think a definition to be a statement of identity, inasmuch as, unless what it predicates (say) of justice could be predicated of other subjects also, the definition would not be a significant statement (p. 312). Does he think that no commensurate proposition is significant, or that no definition is commensurate, or both?

fixed except through the whole system. Now that is not a process of a sort which empirical psychology recognizes, or which Hume (to whose indication of the psychological approach Mr. Morris subscribes) would have contemplated for a moment. And although the formal laws which determine the structure of all experience whatever are said to be rigid and universal, it is also said that logic should not expect to find any actual inferences whose special principles are universal, and by examining which the dependence of valid inference on universal laws could be shown (pp. 315-316).

Lastly, it is asked what authority has logic to judge the validity of reasoning and the claim of knowledge to be knowledge. Hume is allowed to have exploded any absolute difference of kind between knowledge and belief. But we must recognize that scientific ratiocination is good reasoning, and ask with Kant how knowledge of physics is possible. Kant considered how particular instances of such knowledge have been achieved (*e.g.*, by assuming a law like the conservation of energy), and then offered what professed to be an absolute demonstration that knowledge of nature must be reached this way, *viz.*, by the mind applying universal principles. But Kant taught that knowledge of nature is essentially conditional, and yet that we can discover what is unconditionally necessary to the possibility of knowledge. For, he argued, since a theory of a certain *form* has been produced, the mind producing it must throughout have been conforming to a certain principle. But it is obvious (though Mr. Morris does not put the point quite thus) that this could not show that the mind in all its system-building must conform to the same principle, and produce theories of the same form. Mr. Morris does, however, point out that on the principles of Idealistic logic we cannot claim to reach the intuition that thought, if it is to be valid, must work in such or such a way. All logical theories of inference are in the last resort but 'more or less descriptive accounts of an operation which, even considered formally, is ultimately mysterious' (p. 334). We can never hope to exhibit the exact manner and limit of the influence which the formal structure of reasoning, that makes it capable of validity, may exert in determining the character of the real experiences (*i.e.* reasonings) of which it is the form. In plain language, this seems to mean that we cannot know whether a reasoning is valid. Nevertheless, somewhat surprisingly, logic is still allowed to have 'a certain measure of authority, without impairing its standing as a living enquiry' (p. 335).

This section provokes a criticism which has more than once already been hinted at. A physicist reaches what he offers as a piece of knowledge by assuming a law like the conservation of energy. That is taken by Mr. Morris to be a procedure of the same sort as what Kant ascribes to the mind, when he says that pure science of nature, with its synthetic judgments *a priori*, becomes possible because the mind applies universal principles. In the same way, Mr. Morris identifies the system-building which is exhibited in scientific investiga-

tion with the functions of synthesis which, according to the doctrine of Kant's *Transcendental Logic*, make experience possible. But the first is only possible to a mind that has already reached the stage of having an experience of events in time befalling bodies in space; it concerns itself with 'phenomena'. The second are the condition of its reaching this stage, and concern themselves with the 'manifold of sense'. The first is for logic to reflect on and analyse. The discussion of the second belongs to the criticism of the claim which metaphysic makes to know 'things in themselves'. The transcendental logic is not logic in the same sense as the Idealistic logic of which Mr. Morris makes it the source. The understanding's functions of synthesis, according to Kant, work by way of controlling the synthesis of sense through which it comes about that we have intuitions of the space-relations in bodies and the time-relations in events. That is not what the system-building of a man of science does, who assumes some scientific principle, considers whether it squares with all statements of particular experience, and, if it does, accepts it unless one that does so better can be found. It is true that if we reflect on the task assigned by Kant to the synthetic activities of sense and understanding, we find that it has the indeterminate character that would belong to a system-making thought, which found nothing in what was thought about with given and unmodifiable relations. So far Kant's transcendental logic ascribes to the mind an achievement like that with which the Idealistic logic, as Mr. Morris expounds it, credits the mind in its ordinary and its scientific thinking. But there the resemblance ends. So far as what the Idealistic logic offers is an alternative to the 'old' logic's account of inference, belief and knowledge, it is no development of Kant's transcendental logic.

If this criticism be justified, it destroys much of the framework of Mr. Morris's exposition, and the historical affiliations there suggested will appear very suspect. But the book, though difficult and disputable, is highly suggestive. And as a discussion of the issues at stake between a logic like Bradley's and one like Cook Wilson's it will still retain its value.

H. W. B. JOSEPH.

Meinong's Theory of Objects. By J. N. FINDLAY, Lecturer in Philosophy, University of Pretoria. London: Oxford University Press; Humphrey Milford. 1933. Pp. xii + 268. Price 15s.

MEINONG is justly reputed to have recognised more entities than most philosophers care to accommodate. It is not so well known that he also did something far more original, something against which the letter of the traditional version of Occam's Razor enters no caveat. Whether *praeter necessitatem* or not, Meinong also recognised innumerable nonentities. Nor did even this exhaust his hospitality. He

went on to recognise objects which are neither entities nor non-entities, and which have the peculiar importance of being the only objects which are perfectly accessible to our thought.

These singularities of Meinong's teaching have not been sufficiently noticed by British philosophers. The *Untersuchungen zur Gegenstandstheorie und Psychologie* appeared just too late to influence Mr. Bertrand Russell's articles on *Meinong's Theory of Complexes and Assumptions* (MIND, 1904). Confronted with Meinong's obscure and tentative utterances about immanence and pseudo-existence, Mr. Russell reasonably protested that he could not see "how an immanent object differs from no object at all" (p. 509). And although he later reviewed the *Untersuchungen* (MIND, 1905), he did so immediately after first seeing his way to abandoning his own doctrine of the subsistence of chimeras in favour of their total rejection. At such a moment the doctrine of *Aussersein* might easily have seemed but a variant of an old error, and it was possible for Mr. Russell to overlook the fact that, while "there is no such object as the round square" (p. 533) is a proper way of denying the subsistence of the round square, it is not a proper way of denying that the round square is *ausserseiend*. The type of solution advocated by Mr. Russell has since dominated our speculation to such an extent that Meinong's alternative solution has been neglected. The second edition of *Über Annahmen*, by far the best known of the works of Meinong, did little to dispel the belief "that Meinong attributed subsistence to chimeras" (Findlay, p. 47). Its brief and hesitant references to *Aussersein* (especially pp. 79-80, 242) led Dr. Broad to suppose that "*Aussersein*" was no more than a "non-committal name" for "some third kind of being" (MIND, 1913, p. 94), and prevented him from appreciating the bearing of the abandonment of the *Seinsansicht* on the problem of unfactual objectives (p. 100). Nor did the erudite article of Prof. Dawes Hicks (MIND, 1922) do justice to the doctrine of *Aussersein*. Though it mentions, without expounding, Meinong's conviction "that a class of non-subsistent Objects must be recognised" (p. 24), it presents the limitation which distinguishes Metaphysics from *Gegenstandstheorie* as nothing but a failure to study the subsistent (p. 22). Yet, while it must be admitted that Meinong's language, even in *Über Gegenstandstheorie*, gives countenance to such interpretation, the contention, that metaphysicians had, before Meinong, ignored the subsistent in favour of the existent, would be preposterous.

The need for a clear and accurate exposition of Meinong's Theory of Objects and of the extent to which the other doctrines of Meinong are founded on it is admirably met by Prof. Findlay's able and interesting book. The central topic is approached through a sympathetic treatment of the doctrine of content and object. Every mental state consists of an act and a content. The act is "that moment in our experience which varies in a wholly subjective way, and which does not by itself present anything" (pp. 25-26). The

content is the element "in which ideas of distinct objects differ, in spite of their agreement in the act" (p. 22). Hearing one tone and hearing another tone differ in content, though the tones are not contents, but objects. There is no resemblance, except, when the terms are complex, a structural resemblance, between the content and the object of an idea (p. 15). The doctrine is that "it is only because we live through contents that we can refer to objects" (p. 3), but not that it is by *apprehending* contents that we apprehend objects. The account of Twardowski's position (pp. 8-9) is, perhaps, not conclusive on this point. The admission, however, that "if the theory is not to be a mere construction, there must be some occasions on which contents are directly observable" (p. 30, cf. p. 17 for parallel account of Twardowski) removes whatever doubt there may be. It is not objects, but contents, that need to be shown to be not "entirely hypothetical".

I pass over the reasons given (pp. 10-12, 18-22) for holding that the object of an idea is not a part of it. So much the opponents of the doctrine of content and object can and must concede. It is not for this, but for the contention that there are contents, that they require reasons. Meinong claims that "diversity of object must in some way go back to diversity of idea" (p. 22). This claim Prof. Findlay supports by an ingenious but, I think, unsuccessful argument designed to show "that our introspection reveals to us not only that we have ideas but also that *they are ideas of such and such objects*" (p. 23). The alternative to the doctrine he champions seems to be unfairly formulated. "We do not look into our minds and perceive a certain naked idea, then look outwards and see a certain object, and then finally perceive that they are related in a certain way, such that the one is the idea of the other" (p. 23). But if there are no contents the idea is nothing but the seeing the object, and if we are to introspect the idea we must be already seeing the object. He proceeds: "If this were our procedure we might quite conceivably connect an idea with the wrong object. If we were 'living through' the ideas *A* and *B* of two objects *A'* and *B'*, there would on the theory be nothing in the ideas as pure acts to distinguish them from each other; hence if we did not carefully observe their relation to the objects *A'* and *B'*, we might easily imagine that *A* was the idea of *B'* and *B* of *A'*" (p. 23). Since the supposed error would be conditioned by the indistinguishability of *A* and *B* I cannot see in what the error would consist. When Prof. Findlay goes on to say that, on the theory he is attacking, "nothing in our experience would tell us" to what our ideas are directed (p. 24) and to claim that evidence, which is "a property of experiences, and not of their objects," is yet "ultimately the only testimony by which a fact can show us that it is a fact" (p. 33), he seems to be unfaithful to the original position and to base all knowledge on introspection. But neither Meinong nor Prof. Findlay wants to do this. Nothing could be clearer than Prof. Findlay's own statements in chapter viii. (especially p. 252). I

suspect that, in trying to defend the doctrine of content and object, Prof. Findlay is embarrassed by the difficulty of seeing in what way other than by being itself apprehended a content could facilitate the apprehension of an object. He admits "that Meinong's theory of content and object does not altogether explain away the difficulties to overcome which it was constructed" (p. 41, cf. p. 39). The "altogether" seems hardly justified.

Of the philosophers who have recognised chimerical objects, some have been the victims of a confusion between object and content, commonly manifested in the statement that chimeras have being only in our minds. Prof. Findlay's account of the doctrine of content and object shows that Meinong is at least avoiding this mistake. But while it shows what an object is not, it does not show what an object is, and Prof. Findlay leaves it to his readers to discover that in his first chapter the word "object" is used in a different sense from that in which it is used in the remainder of the book. In the first chapter it is equivalent to "something to which a mental process is directed". But we are told later (p. 67) that "an object is anything to which a mental process may be directed". As a mental process may be directed to anything whatever, this use of "object", vital to *Gegenstandstheorie*, is the same as the use of "term" in *The Principles of Mathematics*. It is the noun of unlimited generality.

Of the doctrine of *Aussersein* Prof. Findlay offers both an exposition and, with reservations, a defence. He is careful to distinguish Meinong's position, not only from the rejection of the objects whose being Meinong denied, but also from the view that these objects subsist. The view that "there are certain entities, such as relations, numbers, and facts, which undoubtedly go to the building up of the real world, but of which it would be absurd to say that they existed" (p. 43) and the classification of such objects as subsistent but not existent, are common to Meinong and *The Principles of Mathematics*. But, unlike other philosophers who have held this view, Meinong does not find in it a solution of the problem of chimeras. Instead, he distinguishes between objects which are, in whatever way, and objects which are not, whatever the way in which they would be if they were. In view of the kind of being which is appropriate to them, a golden mountain must be classed with Mount Everest as a real object (pp. 115-116), while the being of a golden mountain must be classed with the being of Mount Everest as an ideal object. You need only to grasp the nature of a golden mountain to see that, if it were at all, it would have to be in the same way as that in which Mount Everest is. Having ascertained that none *exist* you know that there *are* none.

This seems sober where the doctrine of the subsistence of chimeras seems fantastic. One might easily suppose that Meinong's solution was of the same kind as that advocated by Mr. Russell since 1905. The principle of the independence of so-being from being, "that an

object can have definite properties, a definite nature, although there is no such object" (p. 43), seems to square very well with Prof. Moore's contention that "even if temporal facts are unreal, *i.e.*, there are no such things, we can and do think of them" (*Philosophical Studies*, p. 214). Yet the agreement is purely verbal and the two types of solution are as different as possible. The apparent concessions made by those who reject chimeras are conditioned by reluctance to label "incorrect" any modes of speech which are universally and usefully practised. But they make it difficult to find a statement of Meinong's position which his opponents could not admit to be true *in some sense*. Perhaps the need is met by his claim, that metaphysics, because it is concerned only with what has being, must rank as a departmental inquiry, while *Gegenstandstheorie*, liberated from our prejudice in favour of the actual, studies both what is and what is not. (For further evidence of the need, see *Arist. Soc. Procs.*, Sup. vol. xii., p. 59.)

Meinong's main argument in support of his position is one which has also been used to show that chimeras subsist. Taken by itself, it is an argument in support of what is common to the two positions, namely, that chimeras are genuine objects. The argument is that chimeras can be thought of (p. 43) and, more generally, that there are facts about them, including the fact that they do not exist (p. 44). In the face of attempts to refute this argument, and especially of *The Conception of Reality*, Prof. Findlay tries to establish its cogency. In arguing that "even if it were possible to replace facts of existence by facts of so-being, we should still be faced with very similar problems" (p. 54), he seems to me to rely on assumptions which Meinong's opponents cannot be fairly expected to grant. He claims that "the negative fact that nothing in the world has the properties of a ghost" excludes "the circumstance that something should have the properties of a ghost" (pp. 54-55), and he concludes: "If, then, we can admit such non-existent entities as the possible circumstance that something should be a ghost there seems to be no reason why we should not admit ghosts themselves as genuine objects." Now, since it is not the non-existent but the neither existent nor subsistent whose claims are in dispute, this must be one of the occasions on which Prof. Findlay inconstantly uses "non-existent" in the sense of "lacking being". If so, he is relying on Meinong's doctrine that the being of an objective is its being the case.

But Prof. Findlay also claims that there are "insuperable objections to this reduction of facts of being to facts of so-being" (p. 53). A man "might wish, not that any of the objects in existence should be other than it is, but that *some other object*, some object *not* comprised among the objects of our universe, but whose nature is nevertheless determinate in various ways, *should* be comprised in that universe, that is, *should exist*." *E.g.*, without wishing that any "of the objects in the universe should possess the properties of (a) being a stone, (b) turning baser metal into gold", a man might wish "that

there were such a thing as the philosophers' stone". This argument seems to me to raise formidable difficulties, and I could wish that Prof. Findlay had expanded it. But I think it is a sufficient reply to what he says, though possibly not to what he *could* say, to object that, though the non-existence of the philosophers' stone cannot be identified with the fact that no body is determined in the required way, it can be identified with the fact that no part of space is determined in the required way. A sufficient reply to what he *could* say might be found in Prof. Alexander's doctrine that *all* existents are differentiations of Space-Time. Without such a reply it is not easy to be sure that a mere symbolic transformation, which eliminates the phrase "the philosophers' stone," is not an evasion.

Prof. Findlay goes on to show how, by combining the doctrine of *Aussersein* with the doctrine of different modes of being, Meinong reaches a unique solution of the problem of the objects to which judgments, assumptions, and surmises are directed. Some of these objects are facts, and these subsist. Others "resemble facts in every essential respect, but differ from them in so far as they are *not* the case, that is, in so far as they lack the kind of being which is appropriate to facts" (p. 60), and these are objects which are not. Both the objects which are facts and the objects which would be facts if they had being at all are called "objectives", while objects which are not objectives are called "objecta" (p. 67). An unfactual objective differs from a fact in the same way as that in which a golden mountain differs from Mount Everest. Prof. Findlay presents clearly the difference between Meinong's objectives and "the Russell-Moore propositions of 1904" (pp. 83-89).

While I should not be surprised to find that this identification of the factuality of an objective with its being is untenable, I am surprised at the considerations that have led Meinong and Prof. Findlay to abandon it. Prof. Findlay begins by claiming that the relation of objectives "to their own sort of being is distinct from that of objecta to theirs". He proceeds: "All objecta are, as we saw, indifferent to being; *whether* they are or not, makes no difference to *what* they are. It is only by virtue of their inclusion in objectives that they come to be or not to be. The case of an objective is utterly different. No objective acquires factuality or unfactuality merely because it serves as the material for superordinate objectives" (p. 75, cf. p. 102). But what we saw was not what Prof. Findlay says we saw. The principle of the independence of so-being from being was laid down for objects in general (pp. 43-44, 49). The distinction between objectives and objecta had not been drawn, and when it was drawn (p. 67) we were not warned that what had been said of objects was true only of objecta. Moreover, the word used in formulating the principle in *Über Gegenstandstheorie* is "Gegenstand", although the distinction between "Objektiv" and "Objekt" is already available. Nor does Prof. Findlay succeed in showing that the principle *ought* to be restricted to objecta. By the sentence "It is only by virtue of

their inclusion in objectives that they come to be or not to be" he seems to mean something that either follows from, or is identical with, the principle. But I have not succeeded in interpreting the sentence in such a way as to yield any contention that is at all plausible. Turning to what he denies of objectives, I find it incredible that he wants to affirm this of objecta. If the principle were applicable to objectives, he says that there would be "a sense in which unfactual objectives are factual, and factual objectives unfactual". "If we take an unfactual objective *O*, we have the objective '*O* is a fact', which will guarantee its factuality, if any superordinate objective can do so" (p. 76). But the application of the same principle to objecta would be equally disastrous. If we take the non-existent objectum *O*, we have the objective '*O* exists', which will guarantee its existence, if any objective of which it is the material can do so.

The argument is resumed in chapter iv. The claim, that objecta differ from objectives in having being only by virtue of objectives which concern them, is renewed, but is at once abandoned in favour of the claim that "factuality is a genuine property of the factual objective, whereas existence is not, strictly speaking, a property of an objectum which exists" (pp. 102-103). The statement that factuality is the kind of being which is peculiar to objectives is now said to be "not absolutely accurate". "Even an unfactual objective can possess being of a sort, though this being is itself unfactual" (p. 103). This seems erroneous. The difference between factual and unfactual being is a difference not between the sorts of being which factual and unfactual objectives possess, but between being which is possessed by that of which it is the being and being which is not possessed by that of which it is the being. To say that the being of *O* is unfactual is to say that the objective, '*O* has being', is unfactual. Unfactual factuality is a special case of unfactual being, and unfactual being is a special case of an object which is not. A golden mountain, the existence of a golden mountain, and the factuality of the existence of a golden mountain are, according to the original doctrine, genuine objects, not one of which is. I cannot see that any good reason has been given for going back on the claim that the being of an objective is its being the case. Undoubtedly an objective stands in a peculiar relation to its being. Every objective implies its own factuality, and, therefore, its own being. But this presents no difficulty, since what an unfactual objective implies need not be factual.

In his account of objects of higher order other than objectives, Prof. Findlay goes back to Meinong's early writings and shows by what steps he abandoned his psychologistic prepossessions. Prof. Findlay defends Meinong's final position against logical atomism, and himself censures Meinong only for his atomist concessions. Meinong's position has already been admirably expounded in the articles of Mr. Russell and Prof. Dawes Hicks (MIND, 1904 and 1922), and, although Prof. Findlay adds much that is important, I feel justified

in passing to his treatment of a doctrine which, so far as I know, has not hitherto been admirably expounded.

Of the doctrine of the indifference of the pure object to being, an even more daring application than those already noticed is the theory of incomplete objects. These are "objects which have a finite number of determinations, and which are perfectly accessible to our thought" (p. 156). The reason given for recognising such objects is of the same kind as that given for the recognition of chimerical objects. "To think of something that is black and heavy is quite different from thinking of something which is merely black, and this difference ultimately goes back to a difference in the objects concerned" (p. 157). But incomplete objects and chimeras are accommodated on very different terms. Since "everything that has being is fully determined in every possible way" (p. 166), it is false that incomplete objects are. It seems to follow that they are not. But by recognising incomplete objects, however they are to be accommodated, Meinong has already fallen foul of the law of excluded middle. Meinong and Prof. Findlay hold, indeed, that this admission can be toned down. To me it seems that the device employed is merely verbal. *A* may fail to be *B* in two ways, either by lacking *B* or by not being determined in respect of *B*. Prof. Findlay finds this similar to Mr. Russell's doctrine that "It is not the case that the present King of France is bald" is true either if the present King of France is not bald or if there is no present King of France. But there is a vital difference. On Mr. Russell's doctrine, what the possession of a character by an object presupposes is the being of the object. On Meinong's doctrine the presupposition is that the object is determined in respect of the character. But the fulfilment of this presupposition is nothing but conformity to the law of excluded middle. I agree, however, that indeterminateness in respect of being is not more objectionable than indeterminateness of so-being. And only the doctrine that incomplete objects are indeterminate in respect of being does justice to the consideration that no kind of being is appropriate to them (pp. 166-167). It would be misleading to say that an object is not when no object of the same type is. It would be like saying that a golden mountain is not the case. It is better to find, in the notion of implexive being, something that resembles a kind of being. This makes it possible to contrast *the sphere*, as an incomplete object which is embedded in objects which are, with *the plane figure with two sides*, as an incomplete object which is embedded only in objects which are not (p. 169, cf. pp. 210-212).

An alternative solution of the problem is provided by Prof. Mally's doctrine of determinates, of which Prof. Findlay offers two short but interesting accounts. Meinong was right in denying that what he called "something that is blue" is heavy, but wrong in affirming that it is blue. Once this has been acknowledged, however, I cannot see why the object in question should any longer be called "something

that is blue" (p. 183), and I find the same difficulty with the statement "The round square is not really round, nor is it a square at all" (p. 111).

A lucid account of the part played by incomplete objects in Meinong's theory of apprehension seems to be inaccurate in one particular. Prof. Findlay ignores Meinong's distinction between quasi-presence and impresence, and he claims that some quasi-present objects are complete (p. 178, n. 1). It is true that Meinong begins by contrasting the quasi-presence of objects of *Soseinsmeinen* with the presence of objects of *Seinsmeinen* (*Über Möglichkeit und Wahrscheinlichkeit*, p. 188). But when he goes on to place the distinction between presentation and presence in a clearer light (p. 194), he allows quasi-presence only to (some) incomplete objects, and only impresence to complete objects (and to other incomplete objects) (pp. 195, 200, 203), the difference being the important consideration that the determinations whose presence conditions the presentation of a complete object are only some of the determinations of the object. The same consideration prevents some incomplete objects from being more than impresent.

The extent to which Meinong's views about the modal properties of objectives are conditioned by his theory of incomplete objects is excellently brought out. Incomplete objects are "accessible to possibilities, which can find no lodgement in fully determined things" (p. 209), namely, mere-possibilities as distinguished from the also-possibilities involved, *e.g.*, in factuality (pp. 205-206). Statements such as "A triangle may, but need not, be isosceles" find an unusually direct vindication, and Meinong claims (*Mög.*, p. 218) to have met criticism of the kind brought against him (*MIND*, 1913) by Dr. Broad.

It is to be hoped, in view of the quality of his constructive criticism, that Prof. Findlay will at some time give us a direct statement of his own position. For the task of untying some of the knots which the most progressive minds of the age have confined themselves to cutting, an apprenticeship to Meinong is an incomparable training. Meanwhile, Prof. Findlay is to be congratulated upon the completion of a piece of work worth doing and worthily done.

REGINALD JACKSON.

God and the Astronomers, containing the Warburton Lectures, 1931-33.

By WILLIAM RALPH INGE. London, Longmans, Green & Co., London, New York, Toronto, 1933. Pp. xiii, 308. 12s. 6d.

Now that our senior science, Theology, has yielded its pride of place to its runner-up, Astronomy, which (as Dr. Inge points out, p. 2) has become a best seller, it is quite natural for the more vigorous theologians to write books about the astronomers who have sup-

planted them in popular esteem. And when by an ingenious interpretation of the trust-deed the Warburton Lectures in Lincoln's Inn, originally intended for the exposition of Old Testament prophecies and the errors of the Church of Rome, are allowed to be diverted to this more urgent purpose, and are delivered by one of the most eminent theologians and the most eminent journalist in the Church of England, the outcome is likely to be both instructive and entertaining.

But a philosophical review of such a book is by no means easy. For while the philosophic reading of eminent scientists and eminent theologians may be quite extensive, their philosophizing is apt to be a little amateurish; yet the philosophic critic may hesitate to be quite frank about the defects of such great authorities.

Perhaps an adequate review of Dr. Inge's very interesting and characteristic book will be facilitated if I may premise a few preliminary remarks, first about astronomy, next about the philosophic side of Christianity, and finally about the ethics of theological controversy.

(1) Astronomy has of late come into the focus of popular interest because the sciences have become so furiously progressive. In the region of the infinitely great the astronomers, armed with the great telescope on Mount Wilson, have convinced themselves that some thousands of inconspicuous nebulas dotted over the sky are in reality enormously distant galaxies, and moreover that they are all fleeing away from the regions of astronomical space which our sun is traversing, and that with velocities often comparable with the speed of light. These empirical observations challenge explanation, and seem to defy it. They will certainly require extensive transformations of the old astronomy. Furthermore the vertiginous advances of modern physics have revealed even stranger and more incredible happenings in the region of the infinitely little. The whole contents of Newtonian physics, the absoluteness of space, time and motion, the solid and indestructible matter, the stability of elements, the conservation of energy, the strict determination of events, the eternity and immutability of natural law, have all vanished in the melting-pot of the enchantress Scientific Truth, and have not yet emerged rejuvenated. They have all been reduced to the status of working hypotheses which work no longer. In their place there are bubbling up amid the turmoil of discovery the weirdest shapes and fancies, only to be swallowed up anon by still stranger novelties. To behold them with equanimity, nay to preserve one's sanity, there would seem to be need of a strong philosophic faith that all these notions are but operational devices or mathematical fictions, whose whole value lies in the services they perform, and that only so are they legitimate in method, whether they conform to our expectations or shock our prejudices: hence it is best to abstain from impeding them with dialectical objections.

(2) It should never be forgotten that religions are philosophically

indeterminate, simply because their makers had not our philosophic problems in mind when they loosed them on the world. This is particularly true of the Christian religion. Provided he wraps it up in a certain amount of unction a Christian may adopt any philosophy; and any philosophic view may claim that it is the true inner meaning of Christianity. Of course however, when such *tours de force* are tried, some discretion must be shown. In a well-disciplined church it will at any time be possible to obtain an authoritative ruling as to what philosophic interpretation of Christianity may pass as 'orthodox', and what should be condemned as 'heresy'. Hence the Church of Rome will decide this question for a philosopher far more promptly than the Church of England, though it would be asking too much that all such decisions should be consistent with each other and free from all taint of politics. Such at least would seem to be the obvious inference from cases like that of Nicolaus of Kues, who held much the same beliefs as many noted heretics (such as Erigena before, and Bruno after, him), but nevertheless got away with them, because he had the prescience to back the winning Pope, and so could die as Cardinal Cusanus, without loss of orthodox standing.

(3) Under these conditions, it seems as imprudent as it is unfair, for philosophic theologians to hurl stones from their glass houses and to raise the cry of 'Yah, you heretic!', especially at present. They should endeavour to keep their heads and their tempers. This lesson they have already learnt pretty thoroughly as regards the scientists, who have grown quite indifferent to ecclesiastical thunders; but they are still regrettably dogmatic and intolerant towards philosophic ideas which depart from what Dr. Inge calls 'the Great Tradition'.

By the Great Tradition, also called the *philosophia perennis*, the Dean of St. Paul's means the incongruous amalgam of Hellenistic (though no doubt ultimately Platonic) metaphysics, Aristotelian logic, and the story of Christ Jesus, with its claim to be history nay to be the meaning of all history, which theologians, ever since Origen and Augustine, have put forward as the sole intelligible theory of Christianity. Like most of his *confrères*, he introduces his own variations into this theme, laying much more stress, however, on the metaphysical, more or less 'Neo-Platonic' factors (Plotinus, as he interprets him) than on the logical (Aristotelian); but he is by no means unconscious of its 'difficulties'.

Thus the notion of 'creation' troubles him. He does not like "the traditional Christian belief in an external Creator, who made a world which had a beginning in time and will have an end in time" (p. 11). It implies that the world is not as necessary to God as God is to the world (p. 16). And what would occupy the divine leisure before the world's creation and after its destruction? So the Dean "prefers to suppose that there will never be a time when there will be no universe" (p. 70).

Nor will he believe (p. 12) that "there is one single infinite purpose in the universe" . . . "an infinite purpose is a self-contradictory idea". "There is not the slightest reason to think that there is one purpose only in the universe" (p. 69), and Tennyson's "one increasing purpose", is a "hardly intelligible phrase which theologians are too fond of quoting" (p. 226). He candidly admits that "the *philosophia perennis* does not claim to have solved the old antinomies which arise from the conception of infinite Space and infinite Time", but infers that "the solution of the riddle must be outside Space and Time" (p. 101). He admits also (p. 102) that the existence of a sensible world is an insoluble puzzle. "Why and how this lower world was created are questions which, I am convinced, can never be answered. As Bradley says, only the Absolute could answer them" (and that notoriously, will never peach on a pal!). He admits (p. 124) "that events in Time are relevant to the eternal order is the belief of Christianity. . . . Whether the eternal mode of existence can really be deflected in any way by happenings in Time, is a question I shall not attempt to answer. The philosophical difficulties in the way of an affirmative answer are great." He admits (p. 186) that though the Great Tradition "transcends the world of commonsense" . . . "by making it a reflection or copy of the stable and perfect world of Spirit" . . . "it does not explain very clearly how there can be degrees of reality within that world". Nor is he content to transcend the conflict between good and evil with a simple 'Somehow' à la Bradley (p. 187). He admits (pp. 208-209) that "infallibility is a category which man cannot use" . . . "We cannot be sure that our ideas about the ultimate values are right" . . . We "do not claim that we ourselves, or any one else, is in possession of final truth, goodness or beauty". He admits (p. 214) that "Christianity has always been a religion seeking a philosophy . . . and there have always been, and still are, some ragged edges in its intellectual presentation; its eschatology for example is a mass of contradictions, as perhaps every eschatology must be" (!). He admits (p. 217) that he rejects a limited God without being able to reconcile omnipotence with goodness, and that it is not easy to decide whether "it is correct to call God the Absolute" (p. 218). Finally, however, he thinks "the word Absolute as a synonym for God is best avoided, because the use of it makes it difficult to assign any independence to created spirits". Lastly, to find our way through "the impenetrable jungle of traditional eschatology", we are told (p. 245) that "popular thought cannot conceive of eternal life except strictly in the form of duration. But the philosophical difficulties in the way of this belief are very great" (cp. also pp. 275, 280).

Now the amazing thing is that in spite of all these admissions, nay in spite of (p. 223) "my own opinion is that no rational explanation of the existence of the world is possible; it is a given fact, which we must accept as ultimate", the Dean's faith in 'the Great Tradition' apparently remains unshaken, and his abhorrence of all modern

attempts at solving these difficulties remains unabated. Multifarious and heterogeneous as they are, he lumps them all together as 'modernist' philosophy.

This reluctance to try new ways of escape from old *impasses* is presumably a consequence of the theologian's long familiarity with his old 'difficulties'. It is psychologically comprehensible that he should become quite fond of them and hug them to his bosom. Only it seems a little odd that nevertheless he should pride himself so much on his 'disinterested' attachment to the "absolute value of Truth".

The absolute values, indeed, fare very sumptuously in Dr. Inge's volume. He accepts the usual trio, Truth, Goodness and Beauty (p. 192); but he does not treat them in a trinitarian fashion. That is, they are not unified, but "shine like a triple star" (p. 206)—a curious departure (for a Platonist) from the tradition of the Idea of the Good. It means, I suppose, that Dr. Inge has not observed the ambiguity of 'good' in English, and has not distinguished between the moral good and the End of Ends. The Values are, however, equipped with three criteria. (1) They are ends in themselves, (2) they "have a universal quality" and are "essentially impersonal", and yet (3) "they satisfy, delight and elevate *us*" (p. 192, *italics mine*). That does not seem to render them indifferent to relations to us; indeed, it is difficult to make out in what sense they are 'absolute'. When we read (p. 188) that the religious man is one "who counts the world well lost *for*¹ the love of God", and among the servitors of absolute values are enumerated "the patriot who dies *for*¹ his country" and "the artist who lives *for*¹ his art", the idea that 'absolute' can mean 'not relative' must clearly be abandoned: the context would seem to show that it rather means 'disinterested'. But Dr. Inge's view of 'disinterested' also is not clear: on page 288 he allows himself to speak of a disinterested interest, and a little more light on the psychology of 'interest' would be very welcome.

The relation of value to existence also greatly needs elucidation. It is not enough to disclaim (p. 177) the utter (and obviously futile) separation of value and existence, and to proclaim that "a value which has no existence is no value" (except, presumably, as a realisable ideal?) and "an existence which has no value is no existence" (but, according to page 186, its value may be *negative*). Nor is it enough to plead (*ibid.*) that "it is a matter of faith for us that whatever *is* is in its nature intelligible, and there are no concepts which do not involve valuation", if we have no absolutely certain means of discriminating what *is* from what only *seems*, and no assurance that the valuations of our concepts may not be *false*. Personally, I should be very willing to go further even than Dr. Inge in stressing the all-pervasiveness of values; I should roundly declare that every judg-

¹ *Italics mine.*

ment about 'reality' or 'Fact' is essentially a value-judgment, for the reason that it expresses a *preference* for one claim to reality over another. But all this emphasis on human values and the importance of human valuing does not, so far as I can see, carry us any way towards what Dr. Inge desires, *viz.*, the constitution of a separate and transcendent realm of Values. Nor does it assure us that the values which we venerate and predicate are absolute and ultimate.

The truth is that we here confront the ultimate, ineluctable, and insoluble crux of all Platonism, and so of the whole Tradition. It is *vital* to Platonism to project beyond our present life a transcendent realm of intelligible and eternal Being that hovers above the flux of sensible Becoming. For unless this is done, there is no stable background over which the shadows of the Cave can flit: moreover, in Plato's eyes at least, the very form of rational communication and of predication 'is', attested that such 'being' *could* be asserted. Yet, by a weird fatality, so soon as intelligible being had been affirmed, it generated an insoluble problem as to the relation of Being and Becoming, of the sensible and the intelligible. All Plato's loftiest flights were shattered by this obstacle, and none of his successors has failed so gallantly. Yet every expedient has been tried, from Aristotle's day to this: the resources of every language have been exhausted in order to render intelligible the ineffable *nexus* which attaches the world of sense to the world of intuitive reason or, as Dr. Inge prefers to call it, (in spite of its somewhat alcoholic flavour) 'Spirit'.

I cannot see that he has succeeded. Indeed, I do not feel sure that he has perceived the full extent of the difficulty. For he seems to content himself with those very vague and tricky words 'copy' and 'correspondence' to describe the transcendent relation which cannot be *known* to exist even if it does exist, and in which no errors can be detected and corrected. In other words, he never gets beyond the correspondence theory of truth (*cp.* pp. 186, 192, 219, 235, 269). This doubtless is the reason why he has so little understanding of the pragmatist revolt against the old tradition. Yet even if a transcendent world existed and our world *were* a distorted reflex, image, or version, of it, how could we ever *know* it, or convict our senses of distortion? Even if God possessed truth absolute, what good would that be to us? How could we ever measure how far *our* truth fell short of it?

However, it may not be quite fair to discuss only Dr. Inge's attempts to vindicate the Great Tradition and his contributions to the disagreements of philosophers, even though they fill the major portion of his book. For after all his avowed purpose was to pose the astronomers (meaning Eddington and Jeans) with a cosmological question. How could they face the terrible consequences of the Second Law of Thermodynamics and the growth of Entropy? Was it not "a creed more pessimistic than the Ragnarök or Götterdämmerung of the old Scandinavian mythology"? (p. 8). He desires to ask is

there "really no escape from the final doom of the universe" (p. 11). He thinks it "strange that this depressing law was known at the time when Herbert Spencer, Charles Darwin, and a host of others were indulging in exultant pæans about the ineluctable law of progress" (p. 22); for "in any form the doctrine preaches a final stultification of all human hopes, and it already did so when 'the century of hope' was getting drunk on draughts of extravagant optimism" (pp. 23-24). In view of this "unrelieved pessimism as to the ultimate fate of the world" (p. 24), in view of this "painful stultification of our belief in the values of life" making the sum of things "end in nothingness" (p. 35), the Dean cannot understand why both the astronomers and the man in the street should be so unmoved at their prospects. It seems to him (p. 70) that "our astronomers have got themselves into a philosophical impasse by trying to fit real Time, and Entropy, which presupposes real Time, into a purely mathematical universe. The Second Law leaves them with an ultimate acosmism and pan-nihilism".

I must confess that I am not at all appalled by this terrible '*impasse*'. My blood does not curdle nor my hair bristle. I fail to see why any one should worry about the ultimate fate of the universe. It seems to me fantastic to suppose that the ordinary man should lie awake o' nights or dream cosmic nightmares, because millions of years hereafter the earth may become unfit to support life, and because thousands of millions of years later the physical universe may even peter out altogether. For the man in the street has known all along that he lives in a one-way street, which a little way ahead of him ends in a *cul de sac* called death. The astronomer, moreover, has long been aware that sheer destruction might overtake our little earth at comparatively short notice in a variety of ways. He has known that we might run into a cosmic cloud of poison gas (say, carbon monoxide); or that our solar system might collide (once more?) with a nebula or a star; or that our sun might decay into a 'white dwarf'. Nay, all these things might happen æons before the 'energy-death' of the universe; and if he was old enough to feel like leaving the earth anyhow, might he not even feel a certain exultation in the prospect that the whole sorry scheme of things might be shattered at a blow? Thus both the astronomer and the man in the street might reasonably wonder why Brahmins and pundits should profess distress about such very remote possibilities, while remaining mum about much nearer and more poignant problems.

If, finally, Dr. Inge should chance upon a plain unsophisticated Christian, and try to scare him with his Thermodynamic *Götterdämmerung*, would he not be told that the Heavenly Jerusalem was incomparably preferable to the Palestinian, in which there were no abiding habitations?

The plain Christian, indeed, would have every reason to welcome the modern developments of cosmology. Crude though he doubtless

was, he has always conceived creation as a historical fact definitely dated, and salvation as a historical process ending with a glorious transition from time into eternity, in which he would enjoy the beatific vision and the other joys of the blessed for ever and ever. Why, then, should he hesitate to welcome a science which is groping back to a definite beginning of the cosmic order and is in a fair way to vindicate his belief in Creation, and a philosophy which assures him that 'creation out of nothing', so far from being inconceivable, means nothing but the familiar experience of *novelty*?

Thus it is really Dr. Inge and the Great Tradition rather than popular Christianity and modern science who are plunged in embarrassments by the accumulating evidence that all is in process (and so in 'time'); and that so far from Becoming being a corruption of Being, Being is one of the illusions of Becoming, and a verbal trick of predication. As Dean Inge truly and eloquently says (p. 256), "the fate of the material universe is not a vital question for religion. In philosophy it does matter, because if Entropy is true, some philosophies are in ruins".

Assuredly yes; but they are the philosophies of the Great Eleatic Tradition, the philosophies which are cocksure that Time is unreal, and the universe but one, the philosophies for which, whether they call themselves 'realisms' or 'idealisms' (and Dr. Inge's calls itself *both*, *cp.* pp. 7, 37, 260), "the all cannot grow" (p. 113), "there can be no evolution of the whole of reality" (p. 139), and "no progress of the whole" (p. 155); for which, in short, change is impossible in ultimate analysis. The plain Christian has no ground to grieve: for he has not begged the question of the unity of the universe on purely verbal evidence, and is able to believe in a plurality of worlds and modes of being. So from the wrangles of dogmatic metaphysics with speculative science he emerges as the *tertius gaudens*.

F. C. S. SCHILLER.

Das Gestaltproblem in der Psychologie. By BRUNO PETERMANN.
Leipzig: J. A. Barth. 1931. Pp. x + 287.

'GESTALT'-psychology has been developed out of the protocols of subjects who have been contemplating illusions in darkened rooms. Stimulate two points of the retina, one after the other, and you can arrange the time-interval in such a way that you are provided, now with two spots of light, now with one spot, moving from one place to another; place two lines of the same length, one under the other, and they look equal, add lines to them in certain ways and one looks larger than the other; place two curved shapes side by side and they look equal, place one under the other and it looks smaller than the one above—even hens can be thus deceived. The relations of the 'elements' seem to matter; if they are of one kind you see one

thing, if they are of another kind, you see something else. But the relations may remain the same, and yet the perceptions may alter: the pattern on the wall-paper can 'organise' itself in a variety of different ways, and any text-book on psychology will provide us with pictures of 'ambiguous' figures. We pass from such curiosities to music, and here we have to admit that there is some relation which holds the notes of the tune together, which does not hold between the tune and the background of accompanying sound, and, yet again, the quality of the background lends a quality to the tune as a whole, and now we have a new organisation—figure-background. If we examine this relationship in the visual field, we may find that the grey we have chosen as a background for a pattern will 'behave' differently from the way in which it will 'behave' if it forms the figure. With these ideas in our minds we look round at the furniture of the world, and note the way in which the elements are 'carved out', as it were, into things. Bits seem to belong to one another and to be sharply marked off from other bits of the field to which they are juxtaposed. "Das entscheidende Moment, das dabei zur Erörterung steht, ist die *Geschlossenheit und Ganzheitlichkeit* des Gegebenen, in dem Sinne, dass unser Wahrnehmungsfeld sich uns darstellt als ein spezifisch gegliedertes In- und Nebeneinander architektonischer Einheiten 'gegenständlicher', 'dinglicher' Art" (p. 8).

The natural line to take in order to explain these mysterious unities is to start with the elements and then say that when they come together in certain relations they will coalesce and form the unities which we perceive. The word '*Verschmelzung*' has been suggested as the name for the relation which subsists among the 'elements' in order that the new unity shall emerge. This does not carry us very far, because it does not explain how the new unities arise, and it leaves us in the dark as to why certain elements select certain other elements to form a mixture. In any case, we have a number of unconscious sensations as elements in wholes in which they do not figure presentationally, but only as ingredients.

G. E. Müller and his colleagues attempted to discover the principles of affinity between elements, which led to their combination in the production of unities; they suggested '*Kohärenzwirkung*' of various kinds. This still leaves us with unconscious sensations, externally related with one another, and producing, in such relationships, the forms which we perceive. This is, indeed, the fundamental difficulty of all 'element' theories. Müller realised that the interrelationship of elements on a 'coherence' basis would not do, and brought in Attention to help him out. This makes the matter worse, because now we are saddled with unconscious elements and unconscious judgments which act as collectivising agencies. This is the difficulty which besets all 'productive' theories involving psychic acts.

Common to all these theories is the mutual independence of the elements out of which forms are built up, and this is where the

Köhler-Koffka-Wertheimer school comes in. For them form is something ultimate. This means: (1) it is immediate and not the result of a productive act of thought, (2) while analysable into parts, the physical stimuli, which you infer from an examination of those parts, might give rise to different appearances if mixed with stimuli other than those operative on any given occasion. This curious relatedness, in which the parts have certain qualities in virtue of the fact that they are members of a whole, was thought by Köhler to be found in physics and physiology. In his book on the K-K-W Gestalt Theory, Dr. Petermann has shown the inadequacy of such a view. There remains the possibility of a psychic '*Gestalt*' relationship. A complex of physical stimuli cause a set of physiological changes and the result is the perception of a form, which cannot be analysed into independent parts, and that is all there is to it. But why one form rather than another? Why do the parts cohere as they do? Dr. Petermann complains of a certain *ad hoc* element in the K-K-W account. True, Wertheimer has suggested certain '*Gestaltfaktoren*', a '*Faktor der Nähe*', a '*Faktor der Gleichheit*' and so forth, but is this not the old 'element'-theory reappearing? He also suggests a '*Faktor der Prägnanz*': a set of parts form themselves into "einer möglichst ausgeprägten, einer möglichst guten Ganzgestalt" (p. 40) but, as Dr. Petermann points out, this is a vague subjective notion—who is to decide what is a 'good' and what a 'bad' *Gestalt*? Then it is admitted that past experience may influence present perception of forms. If I play cards, the arrangement of pips on a 7 will make me perceive as one whole 7 dots similarly arranged on the black-board. But, says Dr. Petermann, "woher weiss man im konkreten Fall, dass eine solche 'figure attitude' . . . vorliegt?" (p. 45). In any case, we can only point to the operation of a disposition after it has worked.

The strongest argument, however, against the K-K-W theory is that it does not allow for the working of *attitude*. Koffka knows that we can decide which way we are going to look at an ambiguous figure, that it will change before our eyes if we decide to 'see it as', say, a cornice rather than as a flight of steps, but the central factor gets a mere mention, and is not given the importance it obviously deserves. The K-K-W theory is mechanoid; "*Gestalttheorie*" equals "*Selbstgliederungstheorie*".

Besides general theoretical objections to the K-K-W theory, Dr. Petermann produces evidence against the view that the *Gestalt* is immediate, in the sense that it springs directly out of the stimulus. There is, on occasion, a '*Vorgestalterlebnis*' which precedes full '*gestaltet*'-ness. One of the examples given is of a set of parallel lines which gradually get ordered into groups. There is a difficulty here in Dr. Petermann's own account of the story. Surely the set of lines is a *Gestalt* on a background; the point is that it gets further '*gestaltet*'. This certainly indicates a process, but it is a process from one *Gestalt* to another, and not from no *Gestalt* at all to *Gestalt*.

However, it is important to realise that such processes do occur, because it makes any theory which says that the stimuli have a collective effect in producing a '*gestaltet*' whole ready made, without anything else coming in, unsatisfactory.

Dr. Petermann's problem, then, is to devise a theory which will avoid the elements of the 'synthetic' views, the *ad hoc* character of the automatic anti-synthetic '*selbstgliederung*' theory, and the obvious weakness of the psychic act theory.

It is only fair to say that he does not pretend to solve the problem; his book is intended to give us a re-orientation, not a rounded theory.

He begins by emphasising the importance of the '*Gestaltung*' process, and calls attention to some experiments reported by Sander, in which the configured wholes emerged, not this time from an already configured whole, but from a quite vague presentation, which itself evolved from a mere "*ganzheitlichen Gegebenheit*", and insists that '*Gestaltwerdung*' is a development from original '*Ganzheiten*', in the direction of differentiation. Evidence from experiments on the congenitally blind, who have achieved sight, seems to point in the same direction. It is not always clear whether he means that the total field is made up originally of a collection of undifferentiated wholes, which gradually become differentiated, or whether the total field is a '*Ganzheit*' which becomes differentiated into undifferentiated blobs, which become further differentiated. It is possible that he passes from the evidence for the former to the hypothesis of the latter.

The point of all this is that the 'mind' plays a part in the coming into being of '*gestaltet*' wholes; we cannot explain them by reference to their parts alone. The stimulus meets a behaving organism, which *does something* with it, and does not merely passively receive its impressions.

This concept of activity on the part of the organism makes us think of other organised wholes—the organised wholes of behaviour and thought. Dr. Petermann leads us through various theories, step by step, towards his own orientation. Of course he rejects associationism, because of its lack of selective principles. Ach's determining tendencies are on the right track, but do not carry us very far; they state the fact that there is some selectivity at work which links together the parts of series in action and thought, but to call it, on any given occasion, a 'determining tendency' is merely to give it a name. There follows an examination of the theories of Selz. According to him the articulated responses are called forth 'reflexoidally' by the awareness of a problem, and their details are determined by a 'schematic anticipation' of its solution. This concept is embarrassing when we come to apply it to intellectual problems in which the solution cannot be foreseen in the same way in which we can foresee the solution of problems involving manipulation. We only have the vaguest 'operations' to perform:

complex-completion, combination, and abstraction, and, if pressed, we may have to say that a considerable amount of abstraction is performed unwittingly. In any case, abstraction certainly involves a particular attitude towards the data from which this rather than that abstraction is made. So we pass on to the Martius-Wittmann theory of specific '*Ablaufs-formen*', which guide behaviour and thought, and the introduction of a genetic development of such '*Ablaufs-formen*', which can be examined in the case of certain learning processes (*e.g.*, learning to type-write), and which is supposed to lie behind all our organised capacities, including our 'way of looking at things': *e.g.*, "im Bewusstsein des Identischseins, des Andersseins, des Ähnlichseins . . ." (p. 136). We therefore have the further conception of levels of capacity-development.

At this point Dr. Petermann returns to the attack on the problem of perception. Here, too, we have a development, a progressive differentiation. The difference between the development of our perception and the development of our reactive capacities is not as fundamental as one might think. The main point is that both involve *dispositions*, and both involve *attitudes*; both depend on the way the organism '*anspricht*', which might be translated by the golfing verb 'address'. What we do, what we think, and what we perceive depends on the way we are 'addressing' reality, the dispositions which are functioning, and our level of development.

These 'dispositions' remind us of Krueger's idea of '*Struktur*'. These structures, it must be remembered, are not isolated 'faculties', for, as Krueger says: "Bei allen Teilstrukturen haben wir zugleich den dispositionellen Zusammenhang mit dem psychophysischen Gesamtgefüge, dem sie eingliedert sind, mit zu beachten" (p. 158). The background of the specific capacities is the "Gesamtstruktur jedes Seelenwesens", and we are entranced by such language as "Struktur bedeutet gegliederte und in sich geschlossene Ganzheit von Seiendem". But it is complained that Krueger does not pay sufficient attention to the problem of development, and Wittmann is once more called in to redress the balance. Reference might be made here to Bartlett's notion of a 'Schema', which serves the same purpose as Krueger's "Strukturen" and incorporates developmentalism.

All responses, whether in terms of gross action, or thought, or perceptual articulation of the total field of consciousness into a '*gestaltete Ganzheit*', is a response made by a *Gesamt-Struktur*, and it will be influenced by the peculiarities of the *Gesamtstruktur* as a whole (personal style). But the responses do not take the form of haphazard fumbling; action is articulated, thought is articulated, and perception is articulated. At first (*cf.* Werner's '*Entwicklungspsychologie*' *passim*) we respond at random to an outer world from which we are barely detached; the emotional resonance throughout the whole organism affects our perceptions, and we live in a subjectively determined universe. Gradually, as differentiation proceeds,

we advance to levels of development in which the world of perception is carved out into things and situations; to these we respond with articulated manipulations and trains of ideas, the details of which will be further determined by our attitude at the moment of response. Structuration is a central developing feature, and not a relation among elements; a central non-experimental something orders our actions, orders our thought, and orders our perceptual field. Attention is really the organisational aspect of the field of consciousness, some elements being thrown into relief, while others form a mere uninteresting background.

But what of these structures? They are not unitary objects, but form an organised whole. They are not fixed, but merely dominate the *general* form of a train of thought or a series of actions. Their avenue of expression cannot be blocked without sometimes involving a serious disorganisation all round, as exemplified in the case of the man who lost the power of using his right hand and, with it, several other capacities at the same time; and we all know that a man who is 'used to smoking' may be unable to do his work when he is prevented from having a pipe in his mouth. But what *are* they? "Die psychophysische Struktur ist ihrem Wesen nach nichts anderes als eben ein dynamisches Geschehen, ein Geschehen, das nur richtig verstanden werden kann als unmittelbar vitaler Art" (p. 168).

This, I take it, is what is meant by speaking of this kind of view as 'functional'.

Let us consider this present situation. My actions of writing and the ideas which come into my mind are indications of the functioning of a structure, or a set of structures, which have certain peculiarities because they are *mine*, which have been developed during my life, and which partly depend on other facts about me. Or, to use more 'vital' language: I am living out a pattern, determined by the way in which my structured Gesamt-organism 'addresses' itself to its task.

But does this help us at all? Does it say more than that I have the capacity to do this because I am I, and have the structures which function in such a way that I do this?

It is an orientation certainly, but may it not point to a very serious situation in Psychology? If we cannot explain concatenations of acts and thoughts by means of relations between their elements, we must turn to a central factor. If we turn to a central factor, then we may have to join the 'Personalistic' school, and, as they would admit, all ordinary generalisation will go by the board. If we talk in terms of 'structure', and abandon the physiological trace because it is too fixed to suit our purpose, we have to manipulate a 'thing' which is nothing, but *does* something, and "wir hier überall das Problem belastet sehen mit jener gegenständlichen Art zu denken" (p. 260), as Dr. Petermann says.

I think the reason why reification is hard to avoid is two-fold. Firstly, there is the question of language, and secondly there is the

fact that the capacities of human beings are relatively independent of any general principle 'through' which they might be 'explained'.

Consider an absurd example. Suppose the *sole* object and guiding principle of my life were to attract attention by playing with cards; at first I fumble with them, and gradually I develop a 'bridge-structure', a 'whist-structure' and a 'nap-structure'. These are all ways of expressing my dominant urge. I think, if this were true, that there would be less inclination on my part to think of my 'card-structures' as real persistent things; their names would be words by means of which I referred to organised modes of behaviour, through which something else finds expression. In reality there seems to be no such unifying, dominating principle which takes in all my behaviour, and until one is found, I believe we shall go on muddling with 'structures' and 'schemes' as though they existed, and then write books to say they don't.

Further difficulties await us when we consider the problem of the stimulus. Dr. Petermann regards it as a guiding principle, but for him only that is 'stimulus' "sofern . . . es relevant ist in Bezug auf den Reactivprozess des Organismus" (p. 260). He has reminded us of another skeleton in our cupboard. When I see one shape as smaller than another, the stimulus is that which makes me see what I do see, and I see it because the structure which would make me see what I do see has been aroused, because I, as a whole, am 'addressing' the world in such a way that it is aroused.

This seems to make nonsense of Dr. Petermann's book. Such an impression would be quite false. His book is important because it makes us uncomfortable; it makes us ask whether a great deal of psychology is not bound to be nonsense of a rather pretentious kind. I believe he is right in insisting on centralisation, but he is also right in saying that this is only an orientation. The question now is: can we transcend the 'structures'?

W. J. H. SPROTT.

The Balfour Lectures on Realism. Delivered in the University of Edinburgh. By A. SETH PRINGLE-PATTISON. Edited, with a Memoir of the Author, by G. F. BARBOUR. Edin. and London: W. Blackwood, 1933. Pp. x, 258 (the Memoir extending from p. 3 to p. 159). 7s. 6d.

PRINGLE-PATTISON's first and second set of Balfour Lectures, published under the titles *Scottish Philosophy* and *Hegelianism and Personality*, were once very well known, and are still remembered. The third set, on Realism, was published in *The Philosophical Review* (between March, 1892, and May, 1893; see also Jan., 1894), and now appears for the first time in book form. Its original publication was obviously intended as an interim arrangement, the author being minded "to work the subject out before publishing" (p. 56), and

having little leisure, owing to his appointment to the Edinburgh chair in the very year (1891) in which he gave the lectures.

It may not be unfair to conjecture, however, that he himself regarded the fate of these lectures as a fortunate and sufficiently ceremonious burial. If so, the question arises whether the remains should have been disturbed; and I should like to say that I think they should have been. They may, indeed, have approached failure; but Pringle-Pattison's philosophical reputation should not be disturbed by the circumstance, and, taken in conjunction with the earlier Balfour Lectures (here cited, in the first edition, as S. and H. respectively) they seem to me to throw a very interesting light upon the story of British philosophical realism, or, at any rate, a light that would be interesting were anyone still interested in the subject.

The author's *Scottish Philosophy* was written at a time when Huxley's agnosticism had captured educated opinion, and when "the English Kantio-Hegelians" seemed to offer a rather ineffective answer to it, principally (the author thought) because the "gnosticism" of these authors contained impossibly vast omissions. One of these omissions, as the later *Hegelianism* was to argue, was the failure to give an intelligible account of the *subject* of experience; but "timorous idealists" (S. 142) were even more reticent about the *object* of experience, and were oddly unwilling to admit that Nature, so to say, must reciprocate the good intentions of the mind when the mind credits her with rational relatedness. It was an "incongruous idea" (S. 141) that "this human mind of ours should as it were supply the defects of the world and breathe into it principles of which it contains itself no hint". *Hegelianism and Personality*, again, while primarily concerned with the defective account of the *subject* in "gnostic" theory, had the same sort of thing to say about the "gnostic" account of the object. Thus the author said (H. 111): "No sophistry can permanently obscure our perception that the real must be *given*. Thought cannot make it; thought only describes what it finds."

It is likely that Pringle-Pattison, in arguing on these lines, was heartened by the circumstance that his friend S. S. Laurie, in his *Metaphysica Nova et Vetusta* (1884), had shown that a man might have assimilated a great deal of German philosophy and yet remain a dualist, even to the extent of maintaining (*Met.* etc., 2nd ed., 84) that "naïf realism holds its ground". Pringle-Pattison himself, however, was never comfortable in the rôle of a plain man with an exotic past. He believed not in dualism but in the duality of subject and object. Although *almost* a dualist when he pleaded in the secular courts, he held a watching brief for theology and *then* was often inclined towards monism. Again (at times) he was prepared to say that "the mind and world, subject and object are convertible terms" (H. 20), that "every description of existence or relation is necessarily a transcript from our own nature" (H. 97) and other such things. In my view a large part of the interest in

these lectures on *Realism* lies quite precisely in the way in which he tried both to accept and to sublimate a common-sense view of Nature (or, in that sense, a "realism"). His difficulty was that he believed a lot, and perhaps rather too much. Mr. Barbour (p. 158) says that he was not an eclectic. If so, he had something very like eclecticism thrust upon him.

The first of these lectures on *Realism* set out to define epistemology. Psychology, the author affirmed, had to be "dumb" regarding any possibly transsubjective reference of mental processes. The states of consciousness that it studied were, psychologically regarded, necessarily non-significant; yet, except in the case of introspection, our subjective consciousness makes a knowledge-claim that is transsubjective, and the essential business of epistemology is to study that particular claim. Here the idealistic epistemology was at fault. The idealists tried to show that the universe was mind-constituted by appealing to the premiss that the object of knowledge must always be a function of the knowing subject. Epistemology, however, had really to start from "the individual human consciousness" (p. 179), and Hegel should have seen (p. 181) that "the objective thought which he recognises is still transsubjective to the individual knower, just as much beyond his individual consciousness, as if it were the crass matter of the Natural Dualist". On the other hand, Pringle-Pattison *also* maintained that there *was* a higher synthesis. "The universe is once for all a whole, and the external world, as the Hegelians put it, is essentially related to intelligence; in other words, it is not a brute fact existing outside the sweep of the divine life and its intelligent ends" (p. 179). *Metaphysical* dualism of the ordinary type "falls at once into most unphilosophical crudities". So the author's aim was to avoid the crudity and yet be a realist.

Pursuing this aim, he declared in the next lecture (p. 192) that "the only sane theory of knowledge" was a "critical and carefully guarded realism". "The very function of knowledge as ordinarily understood" he said (pp. 183 f.), "is to disclose to one being the nature of beings and things with which he is in relation, but which are different, *i.e.*, numerically and existentially distinct from himself". Like Laurie (*Met.* 81), Pringle-Pattison (p. 184) could not stomach any theory that "in the last resort converted the very notion of knowledge into an argument against the possibility of knowledge"; and he asserted (pp. 191 f.) that if the idealists got rid of *all* their realistic assumptions they would convince nobody, not even themselves.

Developing this theme, he amended part of the statement of the earlier lectures. The immediacy of perception, defended (in a sense) in the *Scottish Philosophy*, was now declared to be a superstition (p. 196) on the ground (which, as it happens, was irrelevant with respect to Reid) that the mind cannot have "its nose up against things" (p. 198). Again, the author renounced his former (occasional) opinion that knowledge might be "the one reality of which subject

and object are two sides or aspects" (p. 193). It may be doubted, however, whether he did not admit too much for his own comfort. Because a percipient cannot "step out of himself" in order to perceive, he held, not merely that perception implies a subjective process, but actually that "we *can* know things only by report, only by their effect upon us" (p. 184). If so, whatever he might elsewhere say, he *did* maintain a theory of representative perception; and the positive argument on which he relied in this place (*viz.*, that action proved our "instinctive realism" to be more than a mere instinct) was obviously weak, since, *e.g.*, it is impossible to prove that colours are primary, not secondary, on the ground that it is biologically advantageous to stop at a red signal.

In the next lecture, he maintained that a realism both of subject and of object should be regarded as a "rational construction" rather than as a hypothesis; but he did not explain what he meant by a "construction". Then he developed the theme that Kant's account of Nature was (empirically) not real enough, and (transcendentally) much too ideal; and he proceeded to give a trenchant criticism of Cohen and of other "immanent" Kantians. The immanentists, he said in effect, murdered "experience" and then worshipped their victim. "Experience" itself "cried aloud for a real subject and a real object" but Cohen and Vaihinger got rid of both, calling each a regulative idea, that is to say, something that governed "experience" by means of a fictitious aspect of "experience".

The conclusion of the matter was that a realistic view of "knowledge" was "the surest guarantee of metaphysical monism—of a unity which underlies all differences" (p. 256); but that statement, surely, was too elliptical to be illuminating. What the author meant by "metaphysical monism" ostensibly was only that "subject and object are members of one world" (p. 194, *cf.* p. 255), and his contention apparently was that, since the common-sense view of Nature and of finite personality must be approximately correct, any genuine account of the unity of the universe is bound to accept these certainties. Such a view may be defensible, but Pringle-Pattison's "guarded realism" seems to have mingled oddly with his "monism". Thus he professed to have learned that "matter" could not be "brute matter", "dead" or "undivine"; but, so far as I can see, did not divulge any reason why a realistic acceptance of Nature as plain men find her proved that she abhorred brutality, death or atheism. Certainly, his usual argument (that partial knowledge need not be false simply because it is not omniscience) has no such tendency; and his rejection of dualism (*e.g.*, p. 256) on the ground that it implied "two absolutely non-communicating worlds" was a rejection of what dualism is *not*.

Indeed, it is not clear what sort of realism Pringle-Pattison expounded; and although it is sometimes a merit for a philosophy to escape classification, it may be doubted whether Pringle-Pattison's realism should be commended on that ground. For he expressed

several opinions about the current labels. Thus, for the most part, he had little sympathy with "hypothetical" realism, preferring realism of the "natural" variety, provided that it was not "crude". Nevertheless, he also affirmed (p. 248) that the "rational construction" he offered was "a hypothesis to explain our experience", and when he preferred to say (e.g., p. 254) that his realism was "a species of trust or presumption", it is not evident that he was not putting his trust in a hypothesis. For the most part, what he said (e.g., p. 249) was that the activity of our reason in judgment *posited* an objective world, a statement which, as it stood—and he was fond of letting it stand by itself—was little different from Fichte's theory without the *Anstoss*, or from many of the characteristics of Kantianism and of neo-Kantianism to which he himself had objected so strenuously and so effectively.

I regret that this review has struck so polemical a note, and concede that it is unhistorical, and in that sense unfair, to examine a "realism" of the '90's in the same spirit as one would examine a "realism" say of the early '20's of the present century. It is the contrast between these periods that seems to me so interesting—the contrast between sweeping generalities and attempts at plodding analysis, between the attitude of "We must do *something* for Nature" and "What precisely do I mean by *this* inkstand?" between "carefully guarded" and belligerently unguarded "realisms". As I have said, I think Pringle-Pattison himself regarded this set of lectures as a failure; and I am not suggesting, even, that they were a splendid failure. Nevertheless, they were obviously the work—and the careful work—of a considerable philosopher whose learning, urbanity and literary grace were visible in every excursion of his pen. If I have not rated them highly enough, I am sincerely sorry.

The Memoir contains much of special interest to philosophers, for example an important letter of Bradley's (pp. 144-147), and Mr. Barbour had special qualifications for his task, having had experience in the biographer's art, as well as being a distinguished student and a personal friend of Pringle-Pattison. This having been said, I should also like to say that I personally (who am no good judge), am apt to experience rather rebellious recollections as I peruse it. I suspect it of guarded realism where there seldom could have been feebler reasons for protective measures, and I am tempted to say that it is as easy to damp with fixed praise as to damn with faint. For what my recollections are worth, I shall narrate an incident rather unlike most in the memoir. I was talking to Pringle-Pattison about his book on *Immortality*, and was assuming that it, the first series in a Gifford Lectureship, would be succeeded by a second series on the same theme. "You mean a metaphysical defence like McTaggart's?" (smiling). "That is the last thing I would ever do." (Slowly and half-confidentially.) "Besides, Immortality is an unpleasant subject."

JOHN LAIRD.

VIII.—NEW BOOKS.

The Principles of Logic. By C. A. MACE, M.A. London: Longmans, Green & Co., 1933. Pp. xiii, 388. 12s. 6d.

HAD Mr. Mace's book been written four years ago one could truly have said that it met a long felt need since it did much to satisfy the requirements of the student and to bridge the gulf between "the stereotyped doctrines of tradition and the more fluid, controversial and generally more difficult topics the development of which belong only to the most recent history of science";¹ but since that time this need has been admirably met by L. S. Stebbing's *A Modern Introduction to Logic*. One wonders, therefore, why Mr. Mace should still have felt the need.

Wherein do the two books chiefly differ? First in liveliness: undoubtedly Prof. Stebbing's is the livelier: Second, in comprehensiveness: Prof. Stebbing's is the more comprehensive from the points of view of, firstly, discussion of controversial points, secondly, more detailed illustrations, and thirdly, more reference to the historical founders of modern logic. Thirdly, they differ in the relative importance attached to certain subjects: for example, while Mr. Mace does not discuss definition and says very little about cause, and Prof. Stebbing says many wise things about both, Mr. Mace says more about statistical relations between classes and Mr. Johnson's treatment of Mill's methods than Prof. Stebbing. Indeed his treatment of these two subjects is excellent. Fourthly, they differ in their treatment of function in logic and mathematics. Mr. Mace's treatment has the merit of being unlikely to confuse the elementary student, but such absence of confusion will be due to innocence of difficulties rather than to clarity gained by their comprehension. Prof. Stebbing's treatment on the other hand, though by no means easy, has the merit of discussing the difficulties. The distinction between form and function, though recognised by both of them, is made more clear I think by Prof. Stebbing, and while she makes clear an important difference between the ordinary function of mathematics and a propositional function, Mr. Mace's treatment is based upon the assumption of their similarity. Lastly they differ because, while Prof. Stebbing's treatment of deduction is as lively and as difficult, or easy, as her treatment of induction, this is not the case with Mr. Mace's book; for, while his treatment of deduction tends to be conventional and dull, his much more interesting treatment of induction is decidedly difficult.

Mr. Mace may have intended his book to provide a more rapid survey of the subject since he says "there are two classes of students whose needs require to be considered; those studying Logic for one year, those who intend to prolong their studies", and for both he believes "there is much to be said for a brief preliminary survey of the field before proceeding to details." Now while I think the deductive part of Mr. Mace's book

¹ See Mr. Mace's review of L. S. Stebbing's *A Modern Introduction to Logic*. MIND, July, 1931.

(chaps. i.-ix.) does supply such a survey, the second part of the book (chaps. ix.-xviii.) seems to me both too difficult and too selective to do so. Difficulty and selectiveness are perhaps largely due to the fact that Mr. Mace is so much influenced by W. E. Johnson. While the second class of students which Mr. Mace has in mind, would, I believe, come to regard the first part of his book, with the exception of the first three chapters, as a useful way of revision rather than a stimulating introduction to the subject, they might well come to appreciate fully the merits of the second part. The first class of student, on the other hand, would, I think, be likely to make little headway with the second part and is unlikely to be enthusiastic about the first part.

Throughout the book Mr. Mace bears in mind four possible approaches to logic, namely, that from common sense which puts the emphasis on the utility of logic in practical thinking, that from science which emphasises the need for justification of scientific inferences, that from the point of view of epistemology concerned primarily with the questions, what and how can we know anything and how infer from this, and lastly, an approach concerned solely with the formal properties of propositions. These four ways of approaching logic are explained in chapter i. and Mr. Mace shows how the focus of each approach is inference. Chapter ii. is, therefore, concerned with this subject. The chapter is interesting because of the psychological acumen it manifests. Chapter iii. is concerned with the distinctions between judgment, proposition and fact. Mr. Mace restricts the last to absolutely specific unities out of which he, like Wittgenstein, believes the world is made up. Hence in dealing with non-atomic propositions which correspond directly with no facts he has to indicate how they may be related to facts. He suggests that this is to be explained in terms of how we judge. Mr. Mace does not deny that this chapter is controversial. The elementary student might well find it difficult. Chapters v.-viii. contain an exposition of the traditional treatment of the fourfold classification of propositions, of opposition, immediate inference and the syllogism. The treatment is necessarily condensed. In chapter vi. Mr. Mace paves the way for his interesting treatment of relations between classes in chapter x.

Such subjects as connotation and proper names are satisfactorily dealt with at relevant points. This is refreshing. It is perhaps doubtful how much a student would benefit by so condensed a treatment of the syllogism as Mr. Mace gives in chapter viii., yet, as he points out, less condensed treatments are available elsewhere. The last section in this chapter, pointing out that the antilogism is the principle of reasoning of which the syllogism is a special case, is, I think, even more condensed, and it seems doubtful whether the student would be able to grasp its importance.

Mr. Mace's intention in chapter ix. is to show how modern logic remedies one of the defects of traditional logic, namely its insufficient analysis of propositional forms and their deductive properties. Though possibly stiff reading for the one year student, the chapter is well done. Discussion of controversial points is not invited, while as straightforward an account as I know is given of such important ideas as incomplete symbol and logical construction. Mr. Mace shows how the deductive characters of classes are logically dependent on those of propositions and deals with the relation between propositional function, generality, classes and descriptions. While the more advanced reader may disagree with some of Mr. Mace's statements concerning such controversial questions few will deny the value of so clear a statement of a plausible view concerning them.

Chapter x. follows chapter ix. in meeting another defect of traditional logic, namely, its failure to supply an adequate basis of scientific method. Mr. Mace's approach to this aspect of modern logic is through classification and division. In an interesting way he discusses interdependence between classes. He gives criteria of independence and explains clearly statistical means of determining dependence. The chapter concludes with a brief section on probability, the merit of which is that he makes clear that to say p has probability d is to say, it would be rational to believe p with degree of belief d , because of h .

The first chapter directly concerned with induction is, I think, decidedly less good than those that follow. In chapter xii. the various types of induction made familiar by W. E. Johnson are distinguished; of these problematic induction is the most important from the point of view of the empirical sciences. Conclusions reached by problematic induction may be complete or statistical generalisations. A special technique exists for establishing the latter. Mill and W. E. Johnson believed such a technique existed for the former. Apart from this special technique of Mill, and Mr. Johnson's refinement of it, complete generalisations may be reached by simple enumeration and by analogy. Chapters xv. and xvi. are concerned with these special techniques, while chapter xiii. is concerned with simple enumeration, and chapter xvii. with analogy. Apart from the fact that in his treatment of simple enumeration Mr. Mace emphasises the quantity rather than the quality of instances, the most interesting aspect of his discussion of this subject is his criticism of Russell's account of the validity of the principle which he believes must underlie the process of simple enumeration.

The two chapters dealing respectively with Mill's and Johnson's technique are preceded by a chapter discussing Mill's views on the Law of Universal Causation. This is unlikely to be easy reading even for Mr. Mace's second class of student. It is perhaps doubtful whether it could be fully appreciated until after Mill himself has been studied and a more elementary treatment of Mill understood. The chapter is an interesting and appreciative criticism of Mill. Mr. Mace shows how, by indirect induction, the probability of one law can be increased by that of others, but that this fact does not enable Mill to establish the certainty of the Law of Universal Causation.

The following chapter on Mill's methods, excluding concomitant variations which is dealt with in chapter xvii., is comparatively straightforward. A clear exposition of the methods is given showing that they are demonstrative and indirect.

Chapter xvi. deals with the possibility of establishing functional laws. Mr. Mace shows how the probability of a generalisation increases with the determinateness of its subject and the indeterminateness of its predicate and with the indeterminateness of the subject and determinateness of the predicate of the evidence upon which it is based. It would, therefore, seem, he argues, that a maximum degree of probability is to be secured by examining determinately defined cases. The difficulty about this procedure is two-fold: (a) we can't be sure that we shall have sufficient data, and (b) we don't know how many cases would constitute sufficient data. Hence we are forced to rely upon parallel laws. A certain class of such laws is specially important, namely, those which Mill was concerned with in his method of concomitant variations, in other words those of functional dependence. Mr. Mace shows how such laws involve both (1) the process of extension from one particular to others (*i.e.* generalisation),

and (2) the process of correlating properties (*i.e.* universalisation). He shows how the processes are related and the importance of the second in Johnson's refinement of Mill. Mr. Mace's treatment of Johnson's figures seems to me excellent. The clear formulation of the distinction between generalisation and universalisation, his correction of the symbolism for the Figure of Composition, and the fact that he bases his exposition of the figures upon the two principles of dependence and independence which emerged from his analysis of Mill's methods, are all to be commended.

The practical limitations of demonstrative induction force an examination of the possibility of establishing generalisations by analogy. The usual points about analogical arguments are made, but Mr. Mace brings out with greater clarity than is sometimes the case what kind of relation is required between the character inferred and those on which it is based. It is I think unfortunate that in discussing the comprehensiveness of the different properties involved in such arguments, Mr. Mace should say both that *abc* is more comprehensive than *a*, and also that being painted by Rembrandt is more comprehensive than being painted by someone of the Dutch school. To suggest that the relation of more or less determinate is similar to that of a conjunction of properties to one property, and that comprehensiveness is to be understood in terms of either, is, in spite of a relevant footnote, confusing.

The last chapter contains an adequate review of the logical position of inductive inference. Mr. Mace makes a useful contribution to the discussion concerning the regulative principles which science seems to require. His own view concerning the ontological postulates required by inductive logic is not unlike that of Mr. Keynes.

The general utility of the book is enhanced by an adequate index and an outline of the argument. Its utility for the second class of students whose needs Mr. Mace had in mind in writing it, is much increased by the bibliographical comments at the end of each chapter.

There are a number of misprints, possibly none of which would mislead anyone.

E. M. WHETNALL.

Experience and Its Modes. By MICHAEL OAKESHOTT. Cambridge University Press: 1933. Pp. viii + 359. 15s.

THE point of view from which this book is written is that of Idealism. Mr. Oakeshott claims to have learnt most from Hegel and Bradley, although he professes not to know how far his own view is Idealistic. Certainly the influence of Bradley is profound not only upon the author's thought but also upon his style. The main purpose of the book is, Mr. Oakeshott says, 'to discover the main implications' of the conception of philosophy as the 'pursuit of what is finally satisfactory in experience'. His point of view is well-indicated in the following statement: 'Philosophy, for me and for others, means experience without reservation or presupposition, experience which is self-conscious and critical throughout, in which the determination to remain unsatisfied with anything short of a completely coherent world of ideas is absolute and unqualified. And consequently, whenever experience remains true to its concrete purpose and refuses to be diverted, to suffer modification or abstraction, philosophy occurs. Philosophy is, then, not a particular kind of experience, and certainly it has no peculiar and exclusive source of knowledge. It is merely experience become critical of itself, experience sought and followed entirely for

its own sake, (p. 82). Towards the end of the book he says again: 'Philosophy is simply experience itself without modification or arrest; and consequently it is the final test and criterion of every world of experience' (p. 350).

I have quoted at length because these quotations may suffice to show the reader what to expect from this book. Since the fundamental concept is experience it is important to understand what Mr. Oakeshott takes 'experience' to denote. He says, "'Experience' stands for the concrete whole which analysis divides into 'experiencing' and 'what is experienced'". Experiencing and what is experienced are, taken separately, meaningless abstractions; they cannot in fact be separated' (p. 9). Mr. Oakeshott tries to make clear this conception of experience and to show that when experience 'suffers abstraction' there is 'an arrest'. In this way arise 'modes of experience'. Experience, the concrete whole, is 'a world of ideas'; a 'mode of experience' is a 'homogeneous but abstract world of ideas' (p. 75). His treatment of sensation and perception as modes of judgment repeats the remarks made familiar to us by the writings of absolute idealists. Equally familiar is his view of Truth and of Reality. 'Truth,' he says, 'is the condition of the world of experience in which that world is satisfactory to itself' (p. 28). Again, 'whatever is satisfactory in experience is true, and it is true because it is satisfactory' (p. 48). It must not, however, be supposed that Mr. Oakeshott's view inclines to pragmatism. Satisfactoriness has nothing whatever to do with human desires and valuations. On the contrary, we are told, 'Truth, in the end, is the character of the coherent world of experience taken as a whole' (p. 77). To achieve a completely coherent world of experience we must 'renounce for the time being everything which can be called good or evil, everything which can be valued or rejected as valueless' (p. 356).

Modes of experience, *i.e.* arrests, are taken to be true in so far as they are coherent. Mr. Oakeshott considers, in three long chapters, three such modes of experience, namely, history, science, and practice. The treatment of history is based upon a considerable knowledge of writings about history. But Mr. Oakeshott does not think that the historian as such is qualified to determine *what* history is; that is to be determined only by the philosopher; hence, he asserts: 'Whatever the historian may think, history is never a mere series, is never concerned with what is merely successive' (p. 91). Again: 'If the historical past be knowable, it must belong to the present world of experience; if it be unknowable, history is worse than futile, it is impossible. The fact is, then, that the past in history varies with the present, rests upon the present, is the present' (p. 107). This extraordinarily confused statement leads to the conclusion that 'what really happened' is 'what the evidence obliges us to believe'. This conclusion would be innocuous enough, for it says little, were it not that it is combined with the view that of 'what really happened we can know nothing' and that the 'facts of history are present facts'. In this way Mr. Oakeshott attempts to support his thesis that the historical past is 'a present world of ideas'.

The treatment of science is peculiarly unsatisfying. Nature is taken to be 'the world conceived coherently under the category of quantity' (p. 190). Thus nature is 'the creation of the scientific mind for the sole purpose of satisfying that mind'. Mr. Oakeshott rightly emphasizes the abstractness of science—of which he takes physics as the type; he thereupon argues that science is incomplete, therefore incoherent; he concludes

that scientific knowledge 'as a world of knowledge, has no contribution whatever to make to our knowledge of reality' (p. 217).

The chapter on Practice is somewhat wearisome to read owing to its numerous repetitions. The main point is that practice proceeds upon the assumption that what ought to be and what is are different, whereas it is the contention of absolute idealism that value is itself a mode of being. Accordingly, Mr. Oakeshott condemns practical experience on the ground of its 'unsatisfactoriness from the standpoint of the totality of experience' (p. 308). His position may be summed up in the following statement: 'Like history, which threw reality into the form of the past only to discover that "reality" and "the past" are contradictory, practice purports to throw reality into the future, into something new and to be made, only to discover that this also is a contradiction of the character of experience' (p. 305).

At the outset Mr. Oakeshott points out that one aspect of his attempt is 'the elucidation of the character of *ignoratio elenchi*'. He maintains that this error occurs whenever it is supposed that the 'abstract worlds' of history, science, and practice can offer anything which can be accepted by the totality of experience. These 'worlds' are irrelevant to philosophy. Those who appreciate this way of thinking will, no doubt, find much to interest them in this book. Those who have not been convinced by Bradley are not likely to be converted by Mr. Oakeshott.

L. SUSAN STEBBING.

The Seventeenth Century Background. Studies in the thought of the age in relation to Poetry and Religion. By BASIL WILLEY. London: Chatto & Windus, 1934. Pp. viii, 315. 12s. 6d.

MR. WILLEY'S book is addressed to students of literature, but is highly interesting to philosophers. It traces the effects of the scientific theory of truth and reality in the realm of sensibility and faith. The effects were partly blighting and partly salutary. In the earlier part of the century the works of Sir Thomas Browne above all exhibit the extraordinarily diverse worlds of belief to which a cultured mind could still genuinely respond, striking out flashes of profound intuition by virtue of this 'loose synthesis'. But Mr. Willey points out how eagerly Browne embraced the new methods of explanation. Bacon's account of prejudices against scientific knowledge is amplified in *Pseudodoxia Epidemica*; but when the century produced Glanvill's *Vanity of Dogmatizing* caution had reached a superb level of detachment. Glanvill supports the modern principles, but offers acute criticisms of their final validity; and his celebrated discussion of witchcraft is directed to exposing the limitations of the scientific spirit.

Mr. Willey sketches in a fascinating manner the varying recognition of spiritual orders of reality by the philosophers of the period and more particularly their attitude towards orthodox beliefs. Excellent summaries from this point of view are given of the Rejection of Scholasticism, of Bacon, of Descartes, and of Hobbes. Two chapters follow on rational theology, in the first of which succinct justice is done to Lord Herbert of Cherbury, and in the second to the chief writers of the Cambridge group. Especially valuable is the summary of John Smith's penetrating analysis of inspiration.

So far there has been little reference to poetry. Donne is barely mentioned and the effect of the new beliefs upon the metaphysical poets is not discussed. But it is 'one of the main purposes of this book to show how inevitably the whole philosophic movement of the century told against poetry' (p. 291); and Mr. Willey indicates the steps by which general opinion arrived at the position of Hobbes and Dryden that judgment is superior to fancy. And 'when we turn from Smith or Whichcote to Locke's writings on religion, we feel that we have left both religion and poetry behind' (p. 281). How then account for that 'isolated volcano thrusting up through the philosophic plains', 'Paradise Lost'? Mr. Willey argues that the contemporary moral sense of reality is displayed in Milton's choice of subject, for in rejecting the allegories of romance for the Biblical story he felt himself in contact with the truth.

The book concludes with an illuminating chapter on Wordsworth and the Locke tradition.

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Received also :—

- E. W. Barnes, *Scientific Theory and Religion* (Gifford Lectures at Aberdeen, 1927-29), Cambridge University Press, 1933, pp. xxiv + 683, 25s.
- H. Bergson, *La Pensée et le Mouvant : Essais et Conférences*, 3rd edition, Paris, F. Alcan, 1934, pp. 322, 25 fr.
- A. N. Whitehead, *Nature and Life* (The Cambridge Miscellany, XIII), Cambridge University Press, 1934, pp. 96, 3s. 6d.
- A. Ferrière, *Der Primat des Geistes als Grundlage einer aufbauenden Erziehung*, authorised translation by E. Hirschberg, Langensalza, Julius Beltz, pp. viii + 260, M. 7.50.
- W. Grebe, *Geist und Sache : Grundlegung der Theorie der Geisteswissenschaften und Klärung des Sinnes kulturellen Schaffens*, Frankfurt am Main, M. Diesterweg, 1934, pp. vii + 226, M. 7.20.
- H. Leenhardt, *La Nature de la Connaissance et l'Erreur Initiale des Théories*, Paris, F. Alcan, 1934, pp. 351, 35 fr.
- J. Pacotte, *La Connaissance : Mathématique, Technique, Humanisme, Métaphysique*, Paris, F. Alcan, 1934, pp. vi + 193, 15 fr.
- P. Decoster, *De l'Unité Métaphysique : Épilogue philosophique*, Brussels, M. Lamertin, 1934, pp. 200, 25 fr.
- L. Lavelle, *La Présence totale*, Paris, F. Aubier, 1934, pp. 253, 15 fr.
- A. Valensin, *Balthazar : Deux dialogues philosophiques suivis de Commentaires sur Pascal*, Paris, F. Aubier, 1934, pp. 177, 12 fr.
- L. Brunschvicg, *Les Ages de l'Intelligence*, Paris, F. Alcan, 1934, pp. 150, 10 fr.
- E. Grünwald, *Das Problem der Soziologie des Wissens : Versuch einer kritischen Darstellung der wissenssoziologischen Theorien*, Vienna, W. Braumüller, 1934, pp. viii + 279, M. 7.50.
- R. Carnap, *The Unity of Science* (Psyche Miniatures), trans. with an Introduction by M. Black, London, Kegan Paul, 1934, pp. 101, 2s. 6d.
- G. Bachelard, *Le nouvel esprit scientifique*, Paris, F. Alcan, 1934, pp. 179, 10 fr.
- E. Meyerson, *La notion de l'identique* (Extrait des Recherches Philosophiques, 1933-34), Paris, Boivin et Cie, pp. 17.
- M. Loewenthal, *Life and Soul : Outlines of a Future Theoretical Physiology and of a Critical Philosophy*, London, G. Allen & Unwin Ltd., 1934, pp. 291, 8s. 6d.

- N. Bohr, *Atomic Theory and the Description of Nature: Four Essays with an Introductory Survey*, Cambridge University Press, 1934, pp. pp. 119, 6s.
- V. Basch, *Essais d'Esthétique de Philosophie et de Littérature*, Paris, F. Alcan, 1934, pp. viii + 411, 50 fr.
- W. D. Lamont, *Introduction to Green's Moral Philosophy*, London, G. Allen & Unwin, Ltd., 1934, pp. 224, 7s. 6d.
- T. T. Segerstedt, *Value and Reality in Bradley's Philosophy*, Lund, A.-B. Gleerupska, 1934, pp. iv + 264, 5 kr.
- W. R. Inge, *Liberty and Natural Rights* (Herbert Spencer Lecture, 1934), Oxford, Clarendon Press, 1934, pp. 38, 1s. 6d.
- D. Draghicesco, *Vérité et Révélation*, I, Paris, F. Alcan, 1934, pp. xiv + 491, 40 fr.
- The Great Design: Order and Intelligence in Nature*, edited by F. Mason, London, Duckworth, 1934, pp. 324, 8s. 6d.
- R. V. Feldman, *The Domain of Selfhood*, London, G. Allen & Unwin, Ltd., 1934, pp. 212, 10s. 6d.
- W. McDougall, *Religion and the Sciences of Life*, London, Methuen & Co. Ltd., 1934, pp. xiii + 263, 8s. 6d.
- Lectures on the Meaning of God in Modern Life* (Scripps College Papers, No. 5), Claremont, Calif., Scripps College, 1933, pp. 71.
- C. C. J. Webb, *Religion and Theism* (Forwood Lectures, together with a chapter on *The Psychological Accounts of the Origin of Belief in God*), London, G. Allen & Unwin, Ltd., 1934, pp. 160, 4s. 6d.
- H. D. Everington, *God—or no God? (A Rationalist looks at Life)*, London, Williams and Norgate Ltd., 1934, pp. 103, 2s. 6d.
- L. P. Jacks, *The Revolt against Mechanism* (Hibbert Lectures, 1933), London, G. Allen & Unwin Ltd., 1934, pp. 77, 2s. 6d.
- J. C. McKerrrow, *Religion and History*, London, Longmans, Green & Co., 1934, pp. 193, 6s.
- W. Jaeger, *Aristotle: Fundamentals of the History of his Development*, trans. by R. Robinson, Oxford, Clarendon Press, 1934, pp. 410, 18s.
- P. N. Srinivasachari, *The Philosophy of Bhedābheda*, Madras, S. Varadachari & Co., 1934, pp. xvi + 366, 7s. 6d.
- M. de Wulf, *Histoire de la Philosophie Médiévale, I: Des origines jusqu' à la fin du XII^e siècle*, 6th edition, Louvain, Institut Supérieur de Philosophie, 1934, pp. viii + 319, 30 fr.
- Joachimi Abbatis *Liber contra Lombardum* a cura di Carmelo Ottaviano, Rome, Reale Accademia d'Italia, 1934, pp. 299.
- Copernic, *Des Révolutions des Orbes Célestes*, Introduction, Translation and Notes by A. Koyré, Paris, F. Alcan, 1934, pp. viii + 154, 18 fr.
- P. Mouy, *Le Développement de la Physique Cartésienne 1646-1712*, Paris, J. Vrin, 1934, pp. 343, 40 fr.
- H. A. Wolfson, *The Philosophy of Spinoza: Unfolding the Latent Processes of his Reasoning*, 2 vols., Cambridge, Mass., Harvard University Press (London, H. Milford), 1934, pp. xix + 440; xii + 424, \$7.50, 31s. 6d.
- E. Metzke, J. G. Hamanns *Stellung in der Philosophie des 18 Jahrhunderts*, Halle (Saale), M. Niemeyer, 1934, pp. vii, 121-266, M. 10.
- G. Gorer, *The Revolutionary Ideas of the Marquis de Sade*, London, Wishart & Co., 1934, pp. 264, 8s. 6d.
- H. Trevelyan, *The popular background to Goethe's Hellenism*, London, Longmans, Green & Co., 1934, pp. xii + 107, 7s. 6d.

- H. Falkenheim, *Goethe und Hegel*, Tübingen, J. C. B. Mohr, 1934, pp. 84, M. 4.50.
- H. Scholz, *Goethes Stellung zur Unsterblichkeits-frage*, Tübingen, J. C. B. Mohr, 1934, pp. 47, M. 1.50.
- C. F. Harrold, *Carlyle and German Thought: 1819-1834*, New Haven, Yale University Press (London, H. Milford), 1934, pp. xii + 346, \$2.50.
- Cournot, *Considérations sur la Marche des Idées et des Événements dans les Temps Modernes*, 2 vols., edited by F. Mentré, Paris, Boivin & Cie, pp. xxiii + 354; 376, 60 fr.
- A. Chappuis, *Der theoretische Weg Bradley's*, Paris, Firmin-Didot et Cie, pp. 138.
- W. A. Hammond, *A Bibliography of Aesthetics and of the Philosophy of the Fine Arts from 1900 to 1932*, Revised and Enlarged Edition, New York, Longmans, Green & Co., 1934, pp. x + 205.
- F. L. Goodenough, *Developmental Psychology: An Introduction to the Study of Human Behaviour* (Century Psychology Series), London, D. Appleton-Century Co., 1934, pp. xvii + 619, 12s. 6d.
- J. C. Flugel, *Men and their Motives: Psycho-analytical Studies*, London, Kegan Paul, 1934, pp. vii + 289, 10s. 6d.
- M. Pradines, *Philosophie de la Sensation, II: La Sensibilité Élémentaire (Les Sens Primaires), ii: Les Sens de la Défense*, Paris, Les Belles Lettres, 1934, pp. 381.
- C. M. Bevan-Brown, F. G. Layton, O. H. Woodcock and F. M. Edwards, *Individual Psychology and Practice* (II), London, C. W. Daniel Co., 1934, pp. 62, 2s. 6d.
- W. Brown, *Psychology and Psychotherapy*, 3rd edition, London, E. Arnold & Co., 1934, pp. vii + 252, 12s. 6d.
- W. Sachs, *Psycho-analysis: Its Meaning and Practical Applications*, London, Cassell & Co., Ltd., 1934, pp. x + 246, 6s.
- H. P. Fairchild, *General Sociology*, New York, J. Wiley & Sons (London, Chapman & Hall, Ltd.), 1934, pp. x + 634, 23s.
- G. Bohn, G. Hardy, P. Alphonandéry, G. Lefebvre, and E. Dupréel, *La Foule* (4me semaine internationale de synthèse), Paris, F. Alcan, 1934, pp. 144, 15 fr.
- G. Lakhovsky, *Le Racisme et l'Orchestre Universel*, Paris, F. Alcan, 1934, pp. 153, 13 fr.
- E. S. Russell, *The Behaviour of Animals: An Introduction to its Study*, London, E. Arnold, 1934, pp. viii + 184, 10s. 6d.
- W. Burridge, *Alcohol and Anaesthesia*, London, Williams & Norgate Ltd., 1934, pp. 65, 2s. 6d.
- Bulletin of the Neurological Institute of New York*, III, No. 3, March, 1934, pp. 359-564.
- Philosophische Hefte: Sonderheft—Kultur, Volk, Rasse, Leben*, edited by M. Beck, Berlin-Wannsee, Dr. M. Beck, 1933, pp. 94, M. 3.
- C. Lambek, *Government by the Principle of Moral Justice*, Copenhagen, Levin & Munksgaard (London, Williams & Norgate, Ltd.), 1934, pp. 96, 4s. 6d.
- W. Northfield, *Secrets of Happiness*, London, The Fenland Press, 1934, pp. 137, 2s.
- A. Fauconnet, *Études sur l'Allemagne*, Paris, F. Alcan, 1934, pp. xii + 201, 15 fr.